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service industries in the  
Canadian input-output  
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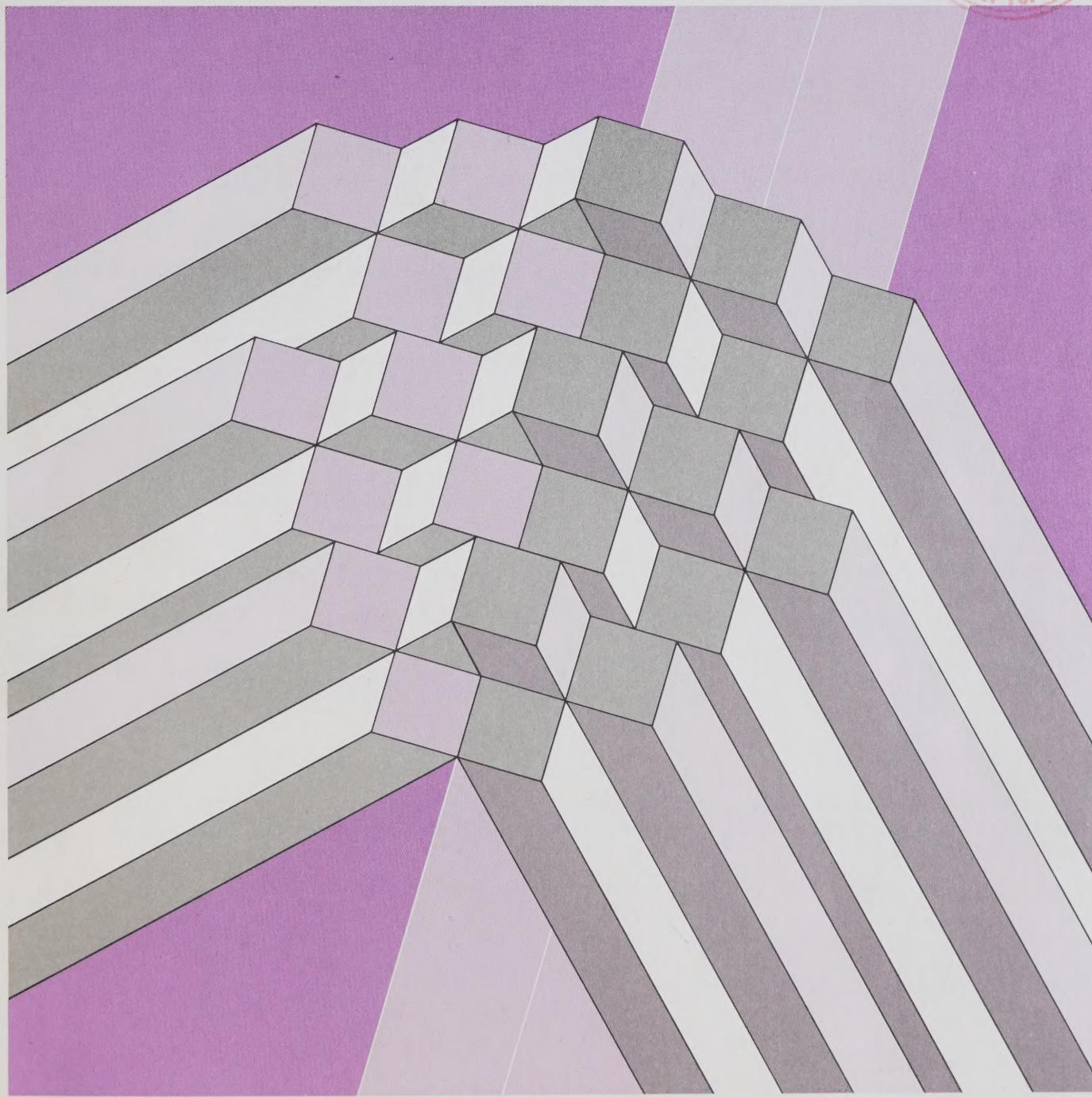


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# Service Industries in the Canadian Input-Output Accounts

(Current Prices)

Sources of data and methods of estimation



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#### Note of Appreciation

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## The System of National Accounts

In Canada, the National Accounts have been developed since the close of the Second World War in a series of publications relating to their constituent parts. These have now reached a stage of evolution where they can be termed a "System of National Accounts". For purposes of identification, all publications (containing tables of statistics, descriptions of conceptual frameworks and descriptions of sources and methods) which make up this System carry the term "System of National Accounts" as a general title.

The System of National Accounts in Canada consists of several parts. The annual and quarterly Income and Expenditure Accounts (included with Catalogue Nos. carrying the prefix 13) were, historically speaking, the first set of statistics to be referred to with the title "National Accounts" (National Accounts, Income and Expenditure). The Balance of International Payments data (Catalogue Nos. with prefix 67) are also part of the System of National Accounts and they, in fact, pre-date the Income and Expenditure Accounts.

Greatly expanded structural detail on industries and on goods and services is portrayed in the Input-Output Tables of the System (Catalogue Nos. with prefix 15). The catalogue nos. carrying the prefix 15 also provide measures of the contribution of each industry to total Gross Domestic Product at factor cost as well as Productivity Measures.

Both the Input-Output tables and the estimates of Gross Domestic Product by Industry use the establishment as the primary unit of industrial production. Measures of financial transactions are provided by the Financial Flow Accounts (Catalogue Nos. with prefix 13). Types of lenders and financial instruments are the primary detail in these statistics and the legal entity is the main unit of classification of transactors. Balance sheets of outstanding assets and liabilities are published annually.

The System of National Accounts provides an overall conceptually integrated framework in which the various parts can be considered as interrelated sub-systems. At present, direct comparisons amongst those parts which use the establishment as the basic unit and those which use the legal entity can be carried out only at highly aggregated levels of data. However, Statistics Canada is continuing research on enterprise-company-establishment relationships; it may eventually be feasible to reclassify the data which are on one basis (say the establishment basis) to correspond to the units employed on another (the company or the enterprise basis).

In its broad outline, the Canadian System of National Accounts bears a close relationship to the international standard as described in the United Nations publication: A System of National Accounts (Studies in Methods, Series F, No. 2, Rev. 3, Statistical Office, Department of Economic and Social Affairs, United Nations, New York, 1968).



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## Introduction

The Input-Output Division has plans to issue, over the next few years, a series of publications intended to provide a full documentation of the Canadian Input-Output Accounts. One of these publications will serve as a general guide to the Input-Output Accounts. It will include an overview of the Accounts consisting of a description of the accounting framework; an outline of the concepts and definitions; a brief discussion of classification systems; input-output applications; and gross domestic product by industry. As well, it will contain two chapters on the sources of data and the methods of estimation utilized in the compilation of input-output accounts, both in current and constant prices. The quality evaluation of estimates will also be discussed.

The sources and methods sections in the general guide will be supplemented by additional volumes dealing in greater detail with the following areas: goods-producing industries in current prices; service industries in current prices; final demand in current prices; and a comprehensive treatment of the deflation of the Input-Output Accounts. Since sources of information and estimation procedures are ever-changing phenomena, updates will be issued as fundamental changes occur.

This publication is the first of these volumes on the sources and methods. It provides the main sources of data and the methodology utilized to estimate current price outputs, inputs and gross domestic product of service industries (see Text Table 1) contained in the annual Input-Output tables of the Canadian economy. An evaluation of the 1986 estimates for these service industries is provided for illustrative purposes. Only those service industries belonging to the business sector<sup>1</sup> are covered. A forthcoming publication on Final Demand will deal with service industries assigned to the non-business sector of the economy.

Input-output concepts and definitions are used extensively throughout this publication and familiarity with them will help the reader.<sup>2</sup>

## Importance of services

The service segment (business and non-business sectors combined) of the Canadian economy has grown in importance over the past twenty years. In 1986, it accounted for 70% of total economy employment, compared to 61% in 1971 and only 54% in 1961. It also accounted for 64% of total Gross Domestic Product (GDP), in current prices, of the economy in 1986, compared to 55% in 1961.

Business sector service industries also provided an increasing share of employment, rising from 34% in 1961 to 47% in 1986. Their share of GDP (current prices) also increased from 41% in 1961 to 46% in 1986.

## Definition of service commodities and industries

There is considerable debate about the distinction between goods and services. Criteria such as unstockability, intangibility and closeness to consumers have been suggested. T.P. Hill summarizes the difference between goods and services as follows: "Whatever the nature of the services provided, a common element running through all kinds of service production is that services have to be delivered as they are produced. This constitutes the fundamental difference from goods production where there is no such constraint on production."<sup>3</sup> This report uses the definition adopted by the Canadian System of National Accounts (CSNA). This definition states that service industries include: transportation, storage, communication; wholesale and retail trade; finance and insurance; real estate operators and insurance agents; business services; government services; education services; health and social services; accommodation, food and beverage; and other services. In the 1980 Standard Industrial Classification (SIC) of Statistics Canada, these industries are defined as Major Groups 45 to 48 and 50 to 99.<sup>4</sup>

Goods have been adequately classified, but a similar classification system for services has not yet been produced. However, service commodities are determined in the Canadian Input-Output tables based on characteristic products of service industries. For example, the output of the advertising industry is advertising service. To understand the spectrum of services produced by service industries and the pricing practices of these industries, it is essential to have a service classification system similar to that for goods-producing industries. Statistics Canada is currently engaged in developing such a system of classification.

<sup>1</sup> Following National Accounting conventions, the Canadian Input-Output tables disaggregate the activities of industries into three sectors: business, personal and government. Activities falling in the business sector are called business sector industries, and those falling in the personal sector and government sector are called non-business sector industries. Service industries in the non-business sector include universities, private clubs, non-profit institutions, government education, government hospitals and other general government services at three levels - federal, provincial and local.

<sup>2</sup> Statistics Canada, *The Input-Output Structure of the Canadian Economy 1961-1981*, Catalogue No. 15-510. This publication will be superseded by the forthcoming publication Guide to The Canadian Input-Output Accounts, Catalogue No. 15-601E volume 1 (Ottawa).

<sup>3</sup> T.P. Hill, "The Economic Significance of the Distinction between Goods and Services", a paper prepared for the International Association for Research in Income and Wealth, Twentieth General Conference, August 1987.

<sup>4</sup> Statistics Canada, op. cit (2) for a concordance between Input-Output industries and the SICs.

## Statistical data base for estimating Input-Output tables for service industries

Developing Input-Output tables for the service industries (business sector) involves estimating approximately 3,000 cells. The ideal data source would be detailed annual surveys conducted at the establishment level according to SIC definition. However, the existing data sources are not yet comprehensive - some are annual, others are occasional, such that some estimation is necessary. The annual Corporation Financial Statistics compiled by Statistics Canada<sup>5</sup> and Revenue Canada data for unincorporated businesses<sup>6</sup> (with suitable adjustments) are used to complement data obtained through surveys. Thus the estimates for service industries on the whole, are less robust compared with the estimates of the goods-producing industries.

Data for the transportation, storage and communication groups of industries are mostly derived from annual surveys. Taxation data are utilized to estimate revenues and expenses for those industries which are under-covered. Some estimation is also required for commodity detail.

The wholesale and retail trade area is covered by annual establishment surveys. However, the expense data for these industries have not been available since the 1971 Census of Merchandising. Hence, corporate financial data and Revenue Canada data are used to develop estimates of expenses and the components of Gross Domestic Product (GDP).

No establishment data are available for most of the finance industries. Data based on the company concept have been adapted to conform to the establishment concept used in Input-Output accounts.

Adequate data are not available for private education, private hospitals or private health laboratories.

The quinquennial census program for business and personal services was discontinued after the 1971 Census. However, some annual and occasional surveys have been conducted, e.g., for accommodation and restaurants, computer services and engineering services. Suitable methods of estimation have been developed using available survey data and data from other sources, such as detailed tabulations of annual revenues and expenses from *Corporation Financial Statistics* and *Revenue Canada* data for gross and net business income for unincorporated businesses.

During the last historical revision of the CSNA, certain developments made it possible to improve methods of estimating inputs and outputs for the 1971-1981 period:

- 1) business register coding and computer resources made it possible to reclassify corporate revenues based on the 1960 SIC to the more detailed 1970 SIC basis for 1979 to 1982;
- 2) wages and salaries data from T-4 sources coded by 1960 SIC industries were available;<sup>7</sup>

- 3) the Services, Science and Technology Division provided total revenues, and revenue and expense details, from surveys of selected service industries;<sup>8</sup> these surveys were initiated under the division's selected services program;
- 4) Tax Record Access Sub-Division provided tabulations of Revenue Canada unincorporated business tax data by 1970 SIC industries since 1975 and by 1980 SIC industries after 1984.

For 1982 to 1986, estimates were based on data obtained from Services, Science and Technology Division from occasional and annual surveys and the selected service industries program. Information from Corporation Financial Statistics and Revenue Canada data for unincorporated business were used to supplement available expense detail.

## Quality evaluation

It is difficult to assess the quality of estimates based on diverse data sources and methodologies. The text table below shows the percentages of the values of outputs, gross domestic product at factor cost, and intermediate inputs which were based on estimates for each industry group. They represent estimated percentages of data which are not directly obtained from annual surveys and/or administrative data. Revenue and expenditure details were developed using company based tax data, partial data or other related sources (e.g., occasional survey data with patterns of expenses interpolated between years). These measures show weaknesses where data are not readily available.

An ordinal quality rating (1, 2, or 3) appears in the annual publication *The Input-Output Structure of the Canadian Economy* (Catalogue 15-201). These ratings, of course, will be revised as significant changes occur in the source data.

The distribution of intermediate inputs requires more estimation than gross outputs because complete expense detail is not always available from surveys. Some estimation is also required for salaries and wages and supplementary labour income (SLI), but in general the distribution of estimates across industries matches that of Labour Division T-4 data. The other estimated components of GDP are net income and operating surplus. Some estimates are developed from survey sources and Revenue Canada taxation data for corporate and unincorporated business. Problems in estimating operating surplus would be greatly reduced if total operating expenses were available from surveys.

<sup>5</sup> Statistics Canada, *Corporation Financial Statistics, Annual, Catalogue No. 61-207* (Ottawa).

<sup>6</sup> Revenue Canada, *Taxation Statistics, Annual*.

<sup>7</sup> The Labour Division T-4 salaries and wages data became available on a more detailed 1970 SIC basis from 1983 to date.

<sup>8</sup> The Services, Science and Technology Division collects detailed data on firms with revenues over \$250,000. For firms with revenues below that level only summary data are assembled from taxation sources.

Text Table 1

## Overview of the Service Industries in the Business Sector of the Canadian Economy, 1986

	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost	GDP Share %
Millions \$					
Transportation and Storage Industries % estimated	37,996 (3%)	19,125 (45%)	-1,383 (6%)	20,254 (10%)	10
Communication Industries % estimated	17,464 (1%)	4,616 (42%)	-400 (1%)	13,248 (1%)	6
Wholesale Trade Industries % estimated	34,518 (2%)	10,902 (72%)	304 (20%)	23,312 (26%)	11
Retail Trade Industries % estimated	42,482 (2%)	13,405 (65%)	807 (30%)	28,269 (20%)	14
Finance, Insurance, Real Estate Operator and Insurance Agent Industries % estimated	106,544 (4%)	27,072 (59%)	10,438 (6%)	69,034 (4%)	33
Educational, Health and Social Service Industries % estimated	13,686 (8%)	3,378 (88%)	10 (77%)	10,297 (11%)	5
Business, Accommodation, Food and Beverage and Other Service Industries % estimated	62,704 (9%)	20,477 (34%)	405 (19%)	41,822 (12%)	20
<b>Total Service Industries in the Business Sector</b>	<b>315,393</b>	<b>98,975</b>	<b>10,182</b>	<b>206,236</b>	<b>100</b>

*Note: Totals may not add due to rounding.*

Weaker areas in the current price service industry estimates are as follows:

**Transportation, Storage and Communication** – Revenue coverage and expense detail for taxis, storage and warehousing, and services incidental to transport do not exist.

**Trade** – Establishment data on expenses are not available.

**Finance, Insurance, Real Estate Operator and Insurance Agent** – No establishment based data on finance and real estate are available. Moreover, investment holding companies pose a constant problem because of limited data availability.

**Education, Health and Social Services** – There is no survey for revenue and expense detail of private hospitals. Partial information exists for education and other health services.

**Business, Accommodation, Food and Beverage and Other Services** – Revenue and expense details are available for the surveyed portion of selected service industries. Revenue and expense detail from a panel of respondents must be inflated to the total industry level. Some expense data are available for industries covered by occasional or annual surveys. However, more commodity detail is required. Some important industries are not covered by surveys, e.g., accounting and bookkeeping services and offices of lawyers and notaries.

The seven groups of service industries comprising the following chapters of this publication are derived from the 1980 Standard Industrial Classification used at Statistics Canada (see Text Table 2). Each chapter begins with an overview of the industry group followed by a discussion of details for individual industries.

**Text Table 2****Business Sector Service Industry Classification in the CSNA**

I/O	Worksheet Level	I/O Link Industry	SC 1980 SIC
<b>Division G – Transportation and Storage Industries</b>			
162.	Air Transport & Services Incidental	118	451,452
163.	Railway Transport & Rel. Services	119	453
164.	Water Transport & Rel. Services	120	454,455
165.	Truck Transport Industries	121	456
166.	Urban Transit System Industry	122	4571
167.	Interurban & Rural Transit Systems	123	4572
168.	Taxicab Industry	124	4581
169.	Other Transport & Services to Transp.	125	4573-4575,4589
170.	Other Service Incid. to Transport	125	4592,4599,996,9991
171.	Highway & Bridge Maintenance Ind.	126	4591
172.	Natural Gas, Pipeline Transport Ind.	127	4611
173.	Crude Oil & Other Pipeline Transport	127	4612,4619
174.	Storage and Warehousing	128	471,479
<b>Division H – Communication Industries</b>			
175.	Radio and Television Broadcasting Ind.	129	4811-4813
176.	Cable Television Industry	129	4814
177.	Telecommunication Carriers & Others	130	482,483
178.	Postal Service Industry	131	4841
<b>Division I – Wholesale Trade Industries</b>			
182.	Wholesale Trade Industries	135	501-599
<b>Division J – Retail Trade Industries</b>			
183.	Retail Trade Industries	136	601-692
<b>Division K – Finance and Insurance Industries and</b>			
<b>Division L – Real Estate Operator &amp; Insurance Agent Industries</b>			
184.	Banks and Other Deposit Institutions	137	701,702,709
185.	Trust, /Deposit Accepting Mortgage Corp.	138	703,704,
186.	Credit Unions	137	705
187.	Other Finance and Real Estate Industries	138	711-729,741-743,7499, 7511,7512,759,761
188.	Insurance Industries	139	731-733
189.	Government Royalties on Natural Resources	140	7495
190.	Owner-occupied Dwellings	141	7513
<b>Division M – Business Service Industries</b>			
191.	Computer and Related Services	142	772
192.	Professional Business Services	143	773,775,776
193.	Advertising Services	144	774
194.	Misc. Business Services	142	771,777,779
<b>Division O – Educational Service Industries</b>			
195.	Educational Service Industries	145	851-859
<b>Division P – Health &amp; Social Service Industries</b>			
196.	Hospitals	146	861
197.	Homes for Personal and Nursing Care	147	8621, 863,865,866,8671,8679,868
198.	Other Health and Social Services	147	8691-8693,8699
<b>Division Q – Accommodation, Food &amp; Beverage Service Industries</b>			
199.	Accommodation Service Ind.	148	911-914
200.	Food and Beverage Service Ind.	148	921,922
<b>Division R – Other Service Industries</b>			
201.	Motion Picture & Video Prod. Distribution	149	961
202.	Motion Picture Exhibition	149	962
203.	Theatre, Sports and Rec. Services	150	963,9641,9642,965,969
204.	Race Tracks and Gambling Operations	150	9643,9644,966
205.	Laundries & Cleaners	151	972
206.	Other Personal Services	152	971,973,979
207.	Photographers	153	993
208.	Misc. Service Industries	154	982,983,991,992, 9999,4842
209.	Other Repair and Maintenance Services	154	994,995

## Chapter 1

### Transportation and Storage Industries

This chapter covers sources and methods for the transportation and storage sector which consists of 11 Input-Output industries. These Input-Output industries are defined in terms of the Standard Industrial Classification (SIC),<sup>1</sup> covering 43 four-digit industries of the 1980 SIC.

The basic statistical unit used for the industry measurement is the establishment<sup>2</sup> in which the main activity is transportation and storage. Some exclusions and adjustments to conform to establishment and industry concepts were made. Manufacturing and trade establishments which produce internal transportation services using their own labour and equipment are excluded. Government sector<sup>3</sup> units that provide transport, incidental services or utilities such as airports, ferries, docks, pilotage, bridges or waterworks are also excluded. In the Canadian Input-Output Accounts, construction activity is separated from all industries and transferred to the construction industry, which is defined on an activity basis. Non-operating financial revenue, that is, revenue from the sale of fixed assets and stocks, is removed from other revenues and expenses. Subsidy revenue is removed from other revenues and shown as a negative input, thereby making no impact on operating surplus. Where incidental or intra-industry activities are reported only through data on net revenue or net expense, estimates are made to reflect a gross flow of transactions (e.g., aircraft servicing between airlines).

### Transportation and Storage

The transportation and storage sector is composed of industries that provide the means to move people or commodities; to store commodities; and incidental services to support such activities.

Passenger transport services are purchased by business as intermediate inputs and by the government sector and consumers as "final demand". On goods (excluding used), revenue from freight transport and storage of commodities is for the most part allocated as a commodity margin.<sup>4</sup> The rest of the freight transport and storage is allocated to direct purchases for transportation of used goods, purchases by foreign countries, and intra-industry use to produce other transport services. Support services incidental to transport include travel agent services, parking, highway and bridge maintenance, and other miscellaneous services incidental to transport.

### Overview

The general estimation methodology relating to the transportation and storage industries is as follows:

- 1) For each industry in this group, total operating revenues and operating expenses are defined and

relevant data are compiled to obtain control totals for outputs and inputs. Most of the data are obtained from industry surveys conducted at the establishment level according to SIC definitions. Some surveys have a regulatory purpose and are thus complete censuses of the industry (e.g., air, rail, and pipeline transportation; radio, television and cable). Other surveys are limited to establishments with annual operating revenue of more than \$100,000. For establishments with annual operating revenue of less than \$100,000, and for industries not covered by surveys, income tax data – corporate<sup>5</sup> and unincorporated<sup>6</sup> – are used, after suitable adjustments to accommodate industry and establishment concepts.

- 2) The difference between the control totals of operating revenues and operating expenses yields a total which is the sum of the values of operating surplus and net income of unincorporated business.
- 3) Estimates for other primary inputs are developed – that is for wages and salaries and supplementary labour income – which are consistent with the control totals of output and operating surplus.
- 4) Some estimates for intermediate inputs of goods and services are obtained from surveys and other sources, and the remainder are projected from the previous year's information (see Estimation of intermediate inputs, p. 19).

A percentage of the "estimated" portion of the data is given in Text Table 3 for output, intermediate inputs, net indirect taxes and Gross Domestic Product (GDP). This estimated percentage represents data which are not directly obtained from annual survey and/or administrative tax data. Estimation is based on periodic and partial information. Some examples are:

- 1) Upward adjustments to output, intermediate expenses and GDP for undercoverage.

<sup>1</sup> Statistics Canada, *Standard Industrial Classification, 1980, Catalogue No. 12-501* (Ottawa, 1980) pp. 14-16.

<sup>2</sup> *Ibid* (1).

<sup>3</sup> See Statistics Canada, *National Income and Expenditure Accounts, Volume 3, Catalogue No. 13-549* (Ottawa, 1975), Ch. 6 and *Size and Structure of the Public Sector Market, 1983 Sources and Methods, Input-Output Division, Statistics Canada*, (Ottawa, 1987).

<sup>4</sup> For a more detailed discussion of the concept of margins, see Statistics Canada, *The Input-Output Structure of the Canadian Economy 1961-1981, Catalogue No. 15-510*.

<sup>5</sup> Statistics Canada, *Corporation Financial Statistics, Annual, Catalogue No. 61-207* (Ottawa).

<sup>6</sup> Revenue Canada Taxation, *Taxation Statistics, Annual*, (Ottawa), Table 9. Industry detail by two-digit SIC type fine occupation codes (FOCs) was derived from unpublished Revenue Canada machine-readable files. The Tax Record Access Sub-Division, Classification Systems Branch, Statistics Canada, also samples unincorporated data, but covers only tax filers with business income (bypassing professional and commission income filers) and codes these to the four-digit 1980 SIC industry classification.

Text Table 3

**Transportation and Storage Industries, 1986 estimates in millions of dollars with percentage estimated for each component**

1986	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost	GDP Share %
Millions \$					
Air/Rail % estimated	13,026 2%	6,767 41%	-579 2%	6,838 3%	34
Water/Truck % estimated	14,533 1%	7,765 41%	85 35%	6,683 20%	33
Urban/Interurban/Taxi Other Tr./Serv./Hwy. % estimated	6,164 8%	3,208 62%	-1,015 6%	3,972 11%	20
Pipeline % estimated	3,178 2%	975 20%	77 -	2,126 1%	10
Transportation Total % estimated	36,901 3%	18,714 44%	-1,433 6%	19,619 10%	97
Storage Total % estimated	1,096 -	411 80%	50 -	635 -	3
Transport, Storage % estimated	37,996 3%	19,125 45%	-1,383 6%	20,254 10%	100

Note: Totals may not add due to rounding.

- 2) Estimation of intermediate expense detail from partial information.
- 3) Application of adjustment factors to net and/or gross income from taxation data to match Census and occasional survey data.

## Sources and Methods

This section presents sources and methods for individual industry outputs, GDP inputs, and other specified inputs. The second section examines adjustments, the extent of estimation, and analysis common to all industries, such as projection of inputs, and surplus and wage adjustments. Note that the projected estimates are later subjected to the constraints of commodity balances.

### A. Sources and Methods Specific to Individual Industries

#### 1. Air transport and services incidental to air transport

This industry consists of establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 451 Air Transport  
 4511 Scheduled Air Transport  
 4512 Non-scheduled Air Transport,  
 Chartered

4513 Non-scheduled Air Transport, Specialty  
 SIC 452 Services Incidental to Air Transport  
 4521 Airport Operations  
 4522 Aircraft Rental  
 4523 Aircraft Servicing  
 4529 Other Services Incidental to Air Transport.

The air transport industry is covered by a number of regulatory and statistical surveys.<sup>7</sup> These surveys have been conducted under the authority of the Canadian Transport Commission and use the uniform system of accounts for commercial air carriers. All commercial air services must have a license and must respond to the surveys. Data used for the industry cover all levels of licensed commercial operators. The industry definition excludes licensed operators of non-profit flying clubs and speciality flying operators whose revenues are strictly ancillary to another business. The data prior to the reference year 1980 provided considerable detail for revenues and expenses. These details have been used to break down more aggregated data from surveys for recent years. There is no survey for services incidental to air transport industry.

<sup>7</sup> Statistics Canada, *Air Carrier Operations in Canada*, Quarterly, Catalogue No. 51-002 (Ottawa). Statistics Canada, *Canadian Civil Aviation Annual*, Catalogue No. 51-206 (Ottawa).

Since 1985, specialty flying operators' data are no longer available from the survey and must be based on tax data for 1980 SIC 4513, air transport, specialty. Data for services incidental to the air transport industry are also derived from tax sources (1980 SIC industries 4521 to 4529, airport operations, aircraft rental, aircraft servicing and other services incidental). Incidental services produced by air carriers themselves are estimated from net non-flying revenues reported in the survey.

The estimate for operating surplus is also based on the sources mentioned above, with adjustments for depreciation, amortized provisions for overhauling aircraft, and expenses for injuries, loss and damage, all considered part of surplus. Major items of expense, such as wages and salaries and fuel by type, are based on data from quarterly and annual surveys of carriers with more than \$500,000 operating revenues. This source accounted for 92% of total wages and salaries and 97% of fuel for 1986. Wages and salaries and fuel estimates for operators with less than \$500,000 operating revenues are based on data from the annual survey only. For services incidental to air transport industry (SIC 452), estimates for wages and salaries are based on tax data on T-4 earnings allocated to SIC industries.<sup>8</sup> Other major expenses of the industry include aircraft rental, food, communications, light, heat, power, landing fees, advertising, traffic commissions and employee benefit plans. These expenses are based on functional expense totals by class of carrier, and are disaggregated using current published data on larger carriers and other survey data. Expenses for aircraft rentals are assumed to be partly equipment rental from other industries and partly air transport purchased from other airlines. The aircraft repair and servicing expense estimate is based on relevant outputs of the air transport and services incidental to air transport industry.

#### Margin allocation: air transport

First, the transport margin for air transport is estimated from freight revenues based on goods versus passenger unit toll revenue derived from unpublished quarterly industry surveys. Second, these estimates of passenger and freight revenues are adjusted to the published annual total revenue. Third, the revenue from transport of mail by Canada Post is deducted. Charter freight revenue is not used for the transport margin because it is mostly allocated to intermediate inputs for air transport. Once calculated, the air transportation margin is allocated to Input-Output commodities, using external trade details,<sup>9</sup> which list exports by mode of transport according to export commodity classification codes. External trade data are used as a sample because foreign air freight represents a significant portion of total air freight.

## 2. Railway transport and related services

The railway industry consists of establishments primarily engaged in the activities classified under the following 1980 SIC industries:

SIC 453 Railway Transport & Related Services  
4531 Railway Transport  
4532 Services Incidental To Railway.

This industry includes all establishments that provide common rail carrier transport services and ancillary services closely associated with rail activity, such as loading, food and beverage, sleeping service facilities, lounge car revenues, operating terminals, etc. The data source for this industry is a census<sup>10</sup> of common railway establishments. The uniform classification of accounts calls for as much separation of rail and non-rail activities as possible. The coverage of the census is therefore conceptually close to Input-Output definitions of industry and establishment. Adjustments used to derive control totals from the survey operating revenues are: removing all government subsidies included in the revenues, including the unspecified subsidy "Western Grain Payments"; adding an estimate for tips to attendants employed on sleeping and parlour cars; adding demurrage and deducting Prince Edward Island ferry service from other revenues. Equipment rentals are reported on a net (rental revenues less rental expenses) basis and are adjusted to show the actual revenue and expense transactions on a gross basis. The control for the adjusted net revenue is the above-mentioned adjusted revenues minus adjusted expenses. Depreciation, casualty and claims expenses are added back to arrive at the total adjusted operating surplus estimate.

Major expenses such as primary inputs, wages and supplementary labour income (SLI), and intermediate inputs of fuel, property taxes and equipment rentals, are based on the industry survey. Additions are made to wages to account for tips to sleeping and parlour car employees. The fuel reported in the survey is used to operate motive equipment. An estimate for general heating fuel is added, based on price and quantity projections from a base year. The net equipment rental expense is adjusted to the gross level based on the net-to-gross ratio from the survey. The estimate of the purchase of contract rail services by the federal crown corporation, VIA Rail, is based on revenue reported by the railways performing the service.

<sup>8</sup> The unpublished files of T-4 employment earnings from Revenue Canada are matched and allocated to establishments by SIC using Business Register and Labour Division files at Statistics Canada.

<sup>9</sup> Statistics Canada, *Trade in Canada, Exports: Merchandise Trade, Annual, Catalogue No. 65-202* (Ottawa).

<sup>10</sup> Statistics Canada, *Railway Transport in Canada: General Statistics, Annual, Catalogue No. 52-215* (Ottawa).

### Margin allocation: rail transport

The transport margin control for rail transport is determined by taking freight revenues and subtracting direct purchases by business for intermediate use and by government and exports for final demand. The rail margin on the transport of goods is allocated to each commodity using the survey of the origin and destination of all CN and CP rail shipments.<sup>11</sup> This survey provides all freight revenues for Canada's two largest rail establishments, which together account for most freight revenues, and required details for all major commodities carried. Estimates of commodity revenues for other railways are derived from another survey that provides total tonnes loaded for all railways and commodities carried.<sup>12</sup> These estimates are converted to revenues by using the revenue/tonne rates from the CN/CP rail origin/destination survey.

### 3. Water transport and related services

This industry consists of establishments primarily engaged in activities classified to the following 1980 SIC industries:

- SIC 454 Water Transport
  - 4541 Freight and Passenger Water Transport
  - 4542 Ferry
  - 4543 Marine Towing
  - 4544 Ship Chartering
  - 4549 Other Water Transport
- SIC 455 Services Incidental to Water Transport
  - 4551 Marine Cargo Handling
  - 4552 Harbour and Port Operation
  - 4553 Marine Salvage
  - 4554 Piloting Service, Water Transport
  - 4555 Marine Shipping Agencies
  - 4559 Other Services Incidental to Water Transport.

The control totals for this industry are developed for two segments; water transport and services incidental to water transport. The control total for water transport is based on a survey<sup>13</sup> that covers all establishments with more than \$100,000 in operating revenues that perform for-hire water transport, government-owned carrier service, or privately-operated shipping or water sightseeing. While establishments in the for-hire and sightseeing categories match Input-Output definitions of water transport, the government-owned category contains government business enterprises and general government operations<sup>14</sup> (e.g., B.C. Ferries and the Canadian Coast Guard). The two components must be separated: the public accounts list general government entities, and corporate tax data<sup>15</sup> give government business enterprise information. Data for private water carriers are examined for accuracy and consistency and, when necessary, adjusted to meet the establishment criteria. Revenues must cover most operating costs and

meet other reporting requirements to conform to the establishment concept.<sup>16</sup> Some companies operate transport divisions within the distribution or wholesale part of their establishments (own-account), but do not report significant separate water transport operating revenues. They are excluded from the water transport industry revenues. Water carriers with less than \$100,000 in operating revenues are not surveyed. Estimates for them are based on income tax data. Excluded from the revenue controls are subsidies and revenues from other modes of transport. Also excluded are other non-transport revenues except those directly incidental to water transport, such as meals and confectionery revenues of ferry boat service, or ship repair revenues. An estimate for meals provided to employees is added to revenues and is similar to the estimate of board and lodging added to wages and salaries.

### Margin allocation: water transport

The water transport margin control consists of freight revenues, less direct purchases of water freight by business for intermediate use and by government and exports for final demand. Part of the allocation of this margin to commodities is based on survey data for revenues and tonnes for the ten most important commodities. The allocation to other commodities is based on surveys,<sup>17</sup> port documents concerning coastwise loadings and international loadings and unloadings of Canadian-flagged ships. Tonnages of these other commodities are converted to values using prices derived from the water financial survey and rates from the CN/CP rail origin/destination survey. These values are then used in the commodity allocation of water transport margin.

The second part of the industry, services incidental to water transport, mostly covers vessel-loading or stevedoring revenues, the St. Lawrence Seaway canal charges, and the Harbour Boards' docking and berthage charges. The source of the control total is income tax data<sup>18</sup> adjusted to remove government pilotage authority charges which are part of general government revenue. Also removed are revenues of companies belonging to other industries.

<sup>11</sup> Statistics Canada, *Railway Transport, Railway Commodity Origin and Destination Statistics, Annual, Catalogue No. 52-214* (Ottawa).

<sup>12</sup> Statistics Canada, *Railway Transport in Canada: Commodity Statistics, Annual, Catalogue No. 52-211* (Ottawa).

<sup>13</sup> Statistics Canada, *Shipping in Canada, Annual, Catalogue No. 54-205* (Ottawa).

<sup>14</sup> See footnote 3, p. 11.

<sup>15</sup> See footnote 5, p. 11.

<sup>16</sup> See footnote 1, p. 11.

<sup>17</sup> See footnote 13, p. 14.

<sup>18</sup> See footnote 5 and 6, p. 11.

The primary inputs of operating surplus, wages and SLI, are estimated for both parts of the industry, based on the same sources and methods used above for revenues. Estimates of the major intermediate inputs of the water transport industry – fuels, oils, boat chartering, loading charges and food costs – are based on survey expense data. The intermediate inputs for the services incidental part of the industry are estimated using industry related data.

#### **Margin allocation: services incidental to water transport**

The control total for services incidental to water transport margin represents service revenues, less direct purchases by business for intermediate use, direct purchases by government and exports for final demand. The allocation of the margin to commodities is derived from data on total tonnages loaded and unloaded from coastwise and international surveys<sup>19</sup> by commodity detail. The tonnages are converted to values using vessel dockage, berthing, loading and unloading rates per tonne provided by the National Harbours Board. These estimates by commodity are used to allocate the margin control for services to water transport.

#### **4. Truck transport**

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industries:

SIC 456 Truck Transport  
 4561 General Freight Trucking  
 4562 Used Goods Moving and Storage  
 4563 Bulk Liquids Trucking  
 4564 Dry Bulk Materials Trucking  
 4565 Forest Products Trucking  
 4569 Other Truck Transport.

It includes all for-hire trucking establishments, common or contract, local or long distance, and includes an estimate of broker-operators. The bulk of the truck industry output control total comes from a census<sup>20</sup> of large establishments with more than \$100,000 operating revenues which transport freight and household goods. This survey covers all types of trucking except brokers who haul goods for larger carriers and other industries. Estimated segments of the industry include trucking establishments annually earning less than \$100,000, and brokers. Trucking establishments earning less than \$100,000 were estimated using corporate T-2 and unincorporated T-1 tax data<sup>21</sup> coded to trucking. The brokers' estimate is based on expenses reported by large carriers and by private trucking establishments in the industry survey. To conform to the concept of operating revenues, the output control was adjusted to remove subsidies and to include ancillary non-

motor carrier activities such as fuel sales, vehicle repairs, etc.

The basic data used to derive operating expenses, depreciation and resulting net income are obtained from the same sources as the output controls. The expense structures of class III motor carrier freight establishments with annual operating revenues from \$100,000 to \$499,999 were used to estimate brokers' expenses and net revenue. Data for the major expenses (wages, fuel, purchased repair, parts, etc.), are available from the survey of larger class carriers. Where survey detail is not available for a class, the previous class is used to disaggregate estimates (e.g., detail for class II operators with annual revenues between \$500,000 and \$1,999,999 was used to estimate class III).

#### **Margin allocation: truck transport**

The truck transport margin control consists of survey reports of freight revenues less direct purchases of freight services by business (intermediate inputs), and by the final demand categories. The domestic part of truck revenue is allocated to commodities using revenue data from the origin/destination survey<sup>22</sup>, which records detailed commodities at a three-digit level. The international truck revenue control is allocated to commodities based on external trade data<sup>23</sup> which list exports by mode of transport, and is adjusted using transport margin rates. The total of domestic and international freight revenues, by commodity, is then used to allocate the truck margin control.

#### **5. Urban transit system**

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industry:

SIC 4571 Urban Transit Systems.

See section 8a) for sources and methods. Similar comments apply for industries in sections 5, 6, and 8a).

#### **6. Interurban and rural transit**

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industry:

SIC 4572 Interurban and Rural Transit Systems.

See section 8a) for sources and methods.

<sup>19</sup> See footnote 13, p. 14.

<sup>20</sup> Statistics Canada, *Trucking in Canada, Annual, Catalogue No. 53-222* (Ottawa).

<sup>21</sup> See footnote 5 and 6, p. 11.

<sup>22</sup> See footnote 20, p. 15.

<sup>23</sup> See footnote 9, p. 13.

## 7. Taxicab

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industry:

SIC 4581 Taxicab industry.

There is no survey for taxicabs, and hence estimates for the entire industry are derived from tax data.<sup>24</sup> Consistency and reliability checks are applied to the estimated output using wages and salaries<sup>25</sup> and consumer expenditure patterns.<sup>26</sup> The only benchmark for the industry is the 1961 decennial census, which has been projected over time using a combination of wages and tax data. These data are incomplete – they do not include unreported tips and unreported income of small taxi operators. The trend of tax data is the most consistent series, and has thus been used more recently to project the control total. Surplus is also based on tax data, and again an addition is made for unreported net income of small unincorporated taxi operators. Wages and salaries and SLI are based on a labour income benchmark year.

Intermediate expenses have all been projected (see page 19) from previous year's estimates based on tax return details.

## 8a. Miscellaneous transportation

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industries:

SIC 4573 School Bus Operations  
 4574 Charter and Sightseeing Bus Services  
 4575 Limousine Service to Airports and Stations  
 4589 Other Transportation n.e.c.

Information for urban, interurban, and miscellaneous transportation industries is obtained from the same source<sup>27</sup>; duplication of establishments that perform two or more types of bus transport has been avoided.

The three industries of urban, interurban, and miscellaneous transportation are treated together because the source and methodology are essentially the same. The survey covers all establishments with more than \$100,000 annual operating revenue. Estimates for smaller establishments are based on income tax file data, and account for 0.1% of urban, 1.4% of interurban and 11% of miscellaneous transportation total operating revenues. Subsidies, which are substantial in the urban transit industry, are separated from other operating revenues. The output control for urban transit is adjusted to add the value of the contract between the British Columbia Transit Authority and British Columbia operators. The coverage of the miscellaneous

transportation industry is incomplete because the survey covers only the bus component of miscellaneous transportation. No estimate has been made for larger establishments offering automobile limousine service to airports and bus and rail stations. Because of the recent development of tax files coded to 1980 SIC, it was possible to develop estimates for SIC 4589, other transportation.

Operating surplus, wages and SLI are estimated, using the same sources and methods as above. As with output, an adjustment is made to expenses to account for the B.C. operator's contract paid by the B.C. Transit Authority. Detail on intermediate expenses from the survey is used to estimate fuels, tires and tubes, motor vehicle parts, agent commissions, rental of buildings and equipment, and advertising, which collectively cover 64% of the major intermediate inputs.

## 8b. Other services incidental to transport

This industry includes establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 4592 Freight Forwarding  
 4599 Other Services Incidental to Transport n.e.c.  
 SIC 996 Travel Services  
 9961 Ticket and Travel Agencies  
 9962 Tour Wholesalers and Operators  
 9991 Parking Lots and Garages.

Up to 1983 the data source for this industry was corporate T-2 and unincorporated tax data<sup>28</sup> coded by SIC industries. After 1983, service industry surveys<sup>29</sup> have been used for the following SIC industries: 9961 – travel agencies, 9962 – tour wholesalers, and 9991 – parking lots. Major adjustments to travel agents and tour wholesalers' revenue are required to include only commissions and margins earned from the sale of transport, accommodation, meals and tour packaging. This is accomplished by deducting the cost of all transport and other services which travel agents purchase and resell to travellers. It reflects only the markup or commissions and the margin earned for tour packaging. Consumers are thus shown purchasing transport, accommodation and tour packaging services directly.

<sup>24</sup> See footnote 5 and 6, p. 11.

<sup>25</sup> See footnote 8, p. 13.

<sup>26</sup> Statistics Canada, *Family Expenditure in Canada, 1986*, Catalogue No. 62-555 (Ottawa, 1989).

<sup>27</sup> Statistics Canada, *Passenger Bus and Urban Transit Statistics, Annual*, Catalogue No. 53-215 (Ottawa).

<sup>28</sup> See footnote 5 and 6, p. 11.

<sup>29</sup> Statistics Canada, *Selected Service Industries in Canada, 1983-1985*, Annual, Catalogue No. 63-231 (Ottawa). Statistics Canada, *Business Services, 1984-1986*, Annual, Catalogue No. 63-232 (Ottawa).

Estimates of wages and salaries, SLI and operating surplus are based on the sources given above for revenues. In addition unpublished expense detail from the new survey of the Services, Science and Technology Division is used. The intermediate expense estimate for travel wholesaler commissions paid to travel retailers is based on the residual of total travel agents' commissions less commissions received from air, urban transit, inter-city, accommodations industries and net commissions on foreign sales. Estimates of intermediate inputs of gasoline and purchased water, rail, and truck transport and storage are projected from freight forwarding tax detail of revenues in the output control mentioned above. Unlike travel agents, whose purchased transport services are netted out to show direct purchases by consumers, freight forwarders are shown having gross revenues, with transport services purchased indirectly as inputs of freight forwarding service. This is done to reveal transactions taking place in intermediate inter-industry flows. These transactions do not involve major purchases by final demand consumers.

#### **Margin allocation: freight forwarding transport**

The control for freight forwarding transport margin is the total output discussed above, less any direct purchase of freight forwarding as intermediate inputs or final demand expenditures.

The margin total is allocated to all commodities based on the margin allocations for air, rail, truck, water and services to water.

#### **9. Highway and bridge maintenance**

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industry:

##### **SIC 4591 Highway, Street and Bridge Maintenance.**

There are three basic sources for the output control for this industry. The first is a projection of an unpublished 1977 survey of international bridges and tunnels.<sup>30</sup> The second is data published in provincial public accounts on domestic bridges and tunnels (e.g., the Halifax-Dartmouth Bridge Commission) and the federal government public accounts (e.g., The Jacques Cartier and Champlain Bridges). The third is an estimate of private contracts for snow removal and other highway services, based on government expenditure detail of purchased contracts for snow removal and other highway services by provincial and municipal general government sectors.

The primary input estimates for international and domestic bridges are based on the same sources as the output controls. The net operating

income for government contract for snow removal and other highway services is based on income tax data.<sup>31</sup> All the intermediate inputs are projected from the previous year's input detail.

#### **10a. Natural gas pipeline**

This industry includes establishments primarily engaged in the activities classified to the following 1980 SIC industry:

##### **SIC 4611 Natural Gas Pipeline Transport.**

The data for the gas pipeline industry are based on an annual census.<sup>32</sup> The output of the industry is part of the wholesale-transport and retail-distribution margins, and represents the difference between producers' well-head value and purchaser value. An additional storage activity is part of the margin output. For those pipelines that own the gas, the margin is calculated as the sales of gas less cost of sales, where cost of sales equal purchases adjusted for change in inventories. Establishments which do not buy and sell natural gas report their revenues under transportation and storage of gas owned by other establishments. Part of the incidental revenue comes from production of liquid petroleum gases (LPGs) extracted from gas being transported. Other miscellaneous operating revenues include rental and sales of gas equipment, and property rental. Adjustments are made to exclude subsidies from sales and to exclude the value of the commodity taxes "gas and gas liquids tax" and "Canadian ownership charge" from the pipeline margin. This is necessary because these taxes are already part of the commodity tax margin on natural gas. Another adjustment adds back the value of gas used in the process of extracting LPGs and adds the same amount to the input of gas used as motive fuel.

Primary input cost estimates are based on the same source and method as for output. Published net revenues are unaffected by the revenue adjustments mentioned above, because the same amount is added or deducted from the total operating expenses. Depreciation is added back to net revenues to obtain an estimate for operating surplus. For reported tax expenses, the residual remaining after the deduction for "gas and gas liquids tax" and "Canadian ownership charge" gives an estimate for property tax input. Data for the major intermediate expense, natural gas used as motive fuel, come from the survey, as do estimates of unreported fuel expense and the value of gas used in the production of LPGs.

<sup>30</sup> Statistics Canada, *International Toll Bridges Tunnels and Ferries*, discontinued Annual, Catalogue No. 53-202 (Ottawa).

<sup>31</sup> See footnote 5 and 6, p. 11.

<sup>32</sup> Statistics Canada, *Gas Utilities: Transport and Distribution Systems*, Annual, Catalogue No. 57-205 (Ottawa).

The other major pipeline industry input from the survey is pipeline transport and gas storage purchased from other establishments, particularly the use of United States pipeline services to deliver gas from one part of Canada to another.

#### **10b. Crude oil and other pipeline**

This industry includes establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 4612 Crude Oil Pipeline Transport  
4619 Other Pipeline Transport.

The survey<sup>33</sup> of this industry is a complete census of all pipeline establishments that carry crude oil and other petroleum products. Unlike natural gas establishments, oil pipelines do not report purchases or sales of oil or oil products; they report only pipeline transport charges and services incidental to pipeline. The reported revenue data require no adjustment. Depreciation is added back to net revenue to estimate operating surplus. The other major primary input, salaries and wages, is taken directly from the survey. The intermediate inputs of property taxes, fuel and electricity for operating the pipeline are also obtained from the survey.

#### **Margin allocation: crude oil and other pipeline**

The control for crude oil and other pipeline margin is the total output, outlined above, plus imported pipeline services for shipments of Canadian oil and other products through the U.S. The oil and other pipeline margin is allocated to the following commodities: crude oil, liquid petroleum gases, fuel oil and gasoline. This is based on a special tabulation of pipeline establishment quantity detail, by type of product transported, to allocate each establishment's revenue. The margin allocation is projected separately for oil and other petroleum products each year using cubic metre/kilometre data.

### **11. Storage and warehousing**

This industry includes establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 471 Grain Elevator Industry  
479 Other Storage and Warehousing  
4791 Refrigerated Warehousing Industry  
4799 Other Storage and Warehousing  
Industries n.e.c.

The industry control totals are developed in two parts: grain elevators, and other storage and warehousing.

The grain elevator industry has not been surveyed since the 1961 decennial Census. The

output control estimates are developed from corporate tax data,<sup>34</sup> essentially for four large grain elevator establishments: Alberta Wheat Pool, Manitoba Pool Elevators, Saskatchewan Wheat Pool, and United Grain Growers. Grain elevator companies earn a large portion of their revenues from buying and selling grain. When they buy on behalf of the Canadian Wheat Board, they earn storage, administration, elevating, drying and other revenues, all allocated as storage margin on grain. They also deal on their own behalf in other grains for which they earn a margin for wholesaling, storage, elevating, or other services. This is also treated in the output as part of storage margin on grain. The wholesale margin part of the output is calculated from sales of products less cost of sales. Corporate operating revenues have been adjusted to conform to the establishment concept by excluding divisions of companies which are considered establishments in another industry, such as oilseed and flour mills in manufacturing, and farm product retail outlets in trade. Revenues for the grain elevators' crop year ending July 31 are adjusted to a calendar year basis, using an additional year's preliminary reports and estimates to supply missing detail.

The last survey for the second part of the storage industry, other storage and warehousing, was conducted in 1977.<sup>35</sup> This was a complete census of the industry, excluding cold storage lockers. An estimate for cold storage lockers has been added to complete the coverage. The revenue control totals and major expenses have all been projected using corporate<sup>36</sup> and unincorporated<sup>37</sup> tax data, then removing reports about other industries to derive an estimated output control.

Wages and salaries and SLI, operating surplus, indirect taxes and intermediate inputs for grain elevators are based on the same tax data as for output. Corresponding inputs for other storage and warehousing are projected from tax data. The rest of the inputs are projected from previous years' information.

#### **Margin allocation: storage and warehousing**

Storage and warehousing revenues are not allocated as a commodity margin, but rather as direct intermediate or final demand expenditures. Grain elevator output is allocated as a margin that combines grain elevator storage and other services, and wholesaling. The elevator margin is allocated to each type of grain based on the

<sup>33</sup> Statistics Canada, *Oil Pipe Line Transport, Annual, Catalogue No. 55-201* (Ottawa).

<sup>34</sup> See footnote 5, p. 11.

<sup>35</sup> Statistics Canada, *Public Warehousing, discontinued Annual, Catalogue No. 63-212* (Ottawa).

<sup>36</sup> See footnote 5, p. 11.

<sup>37</sup> See footnote 6, p. 11.

constant dollar value of grain shipments and published details of elevator charges by type of grain.

## B. Sources and Methods Common to All Industries

### Estimation of intermediate inputs

The approach to developing intermediate input estimates for all transport and storage industries is basically the same. First, data for as many inputs as possible are obtained from surveys and related sources. A few inputs, such as rental of property and equipment, indirect taxes, and advertising, are available from tax data. Adjustments are sometimes necessary for the spare parts and maintenance supplies commodity input to deduct materials used by employees for own-account repair construction, which are routed to repair construction industry inputs. When all available data on intermediate and primary inputs in the individual industry descriptions are specified, a residual is derived by deducting these inputs from the output control total. This residual is used to estimate the remaining intermediate inputs. Remaining unspecified inputs for each industry are projected from the last Input-Output benchmark year by multiplying with a composite index derived from price deflators<sup>38</sup> and constant dollar output. The resulting total of estimated inputs is then compared to the residual of revenues less specified inputs. If the level and movement of the results are reasonably close, the projected inputs are used. If the residual for intermediate inputs differs greatly from the projected input estimates, further analysis is conducted. This includes checking consistency, survey sources, definitions, adjustments, deflators, etc. Discrepancies in each industry's framework are edited through this check procedure.

A final adjustment is made to each material input for inventory valuation (IVA).<sup>39</sup> This is the difference between the change in inventory book values and the value of physical change in inventories, and is a measure of net holding gain or loss which businesses realize on their inventories as a result of price change. Holding gains and losses on inventories are present in the business operating surplus and must be removed in order to measure current production.

### Adjustments to net revenues to derive operating surplus

As stated in the chapter overview, industry survey data are used for as many Input-Output industries as possible. A combined total for surplus and unincorporated net income is calculated by deducting surveyed operating expenses from reported operating revenues. When survey data are unavailable, corporate tax files<sup>40</sup> are used to estimate surplus. Unincorporated tax files<sup>41</sup> are used to estimate net income of unincorporated business. Industry surveys do not collect data separately for corporations and

unincorporated businesses, so an estimate (see following section) of net income for unincorporated business must be deducted from the survey data to arrive at the surplus. To conform to Input-Output concepts, surplus estimates from the surveys must be adjusted to add back subsidies shown as negative expenses, net bad debts, capital items and charitable donations charged to operating expenses, and insurance claims received but not reported. It is also necessary to deduct from survey net revenues the expenditures on stock and bond commissions and net bank service charges not reported as operating expenses. Also deducted are price increases in the book value of inventories during the year (the IVA), and depreciation of capital leases that should be charged to other industries but are included with own-asset depreciation. Capital items charged to current expenses come from capital expenditure detail. Depreciation of capital leases, charitable donations and net bad debts are obtained from taxation statistics.<sup>42</sup> Insurance claims, stock and bond commissions and net bank charges are derived from the detail for finance industries. The IVA for each industry is based on reported inventories from the survey or tax file data.

The following is a tabular summary of additions and deductions which enter into the estimate of operating surplus:

	Additions	Deductions
Net Revenue (from survey data)	Subsidies Net Bad Debt Capital Items Charged to current account Charitable Donations Insurance Claims	Net Income Unincorp. Stock and Bond Comm. Net Bank Charges Inventory Valuation (IVA) Depreciation of Leases
		Surplus (adjusted)

### Gross and net income of unincorporated business

Net income of unincorporated business is based on several T-1 unincorporated tax files.<sup>43</sup> The control total for all transport and utility industries is published by Revenue Canada and is available at the two-digit level of SIC on unpublished data tapes. An estimate of unreported income of taxi operators is added to the control totals. The Revenue Canada two-digit industry data are further broken down into three-digit Input-Output industries using an unpublished file developed by the Tax Record Access Sub-Division of Statistics

<sup>38</sup> Statistics Canada, *The Input-Output Structure of the Canadian Economy in Constant Prices*, Catalogue No. 15-202 (Ottawa, 1987).

<sup>39</sup> See *Guide to the Income and Expenditure Accounts*, Catalogue 13-603E, No. 1, Occasional. P.64-65.

<sup>40</sup> See footnote 5, p. 11.

<sup>41</sup> See footnote 6, p. 11.

<sup>42</sup> See footnote 5, p. 11.

<sup>43</sup> See footnote 6, p. 11.

Canada. This file is based on a sample of tax filers whose business income is coded to the four-digit 1980 SIC. It is used to develop gross income unincorporated tax data estimates for output controls and depreciation for those industries for which survey data are lacking.

### **Wages and salaries and supplementary labour income (SLI)**

The wages and salaries and SLI estimates developed for each specific industry (see next section) must be adjusted to accommodate labour income definitions and Input-Output concepts. An estimate of directors' fees, which are often not reported, is added to most of the survey-derived data for wages. Adjustments are also made to particular industries for board and lodging and tips when they have not been included in the survey wages and salaries data.

Estimates of SLI are based on two sources. Whenever new survey data are of high quality, they are used for the supplementary labour income expense. SLI is defined as the premiums paid by the employer for employee social and welfare benefit plans. It does not include such items as automobile, meal, accommodation and travel expenses. The alternate source is a projection of the SLI as a ratio of

the above industry-derived wages and salaries. The ratio comes from a labour cost survey of the transport and utility sector, last conducted in 1978.<sup>44</sup> The survey provided unpublished detail itemizing all elements of labour cost by three-digit 1970 SIC. The total wages and salaries and SLI for the transport and utility sector must then be reconciled with labour income control totals from Labour Division of Statistics Canada.

Industry wages and salaries and SLI must also be adjusted to remove the value of the industry's own employees performing new and repair construction which, in the Input-Output framework, is part of the construction industry. Unpublished labour income data for own-account new and repair construction are available for most three-digit SIC industries from the capital and repair expenditures survey.<sup>45</sup> This construction labour income is split between wages and salaries and SLI using the SLI to wages and salaries ratio for the industry as a whole. The result is then deducted from the control total of wages and salaries and SLI to get final adjusted totals for each industry.

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<sup>44</sup> Statistics Canada, *Employee Compensation in Canada, All Industries, 1978, Catalogue No. 72-619* (Ottawa, 1980).

<sup>45</sup> Statistics Canada, *Construction in Canada, Annual, Catalogue No. 64-201* (Ottawa).

## Chapter 2

### Communication Industries

This chapter describes sources and methods for communication industries which consist of three Input-Output industries. These industries are an aggregation of seven four-digit 1980 SIC's.

As in the previous chapter, the basic statistical unit used for industry measurement is the establishment. There are some exclusions and adjustments to conform to Input-Output concepts.<sup>1</sup> Construction activity is separated from all industries and transferred to the Input-Output construction industry. Non-operating financial revenue from the sale of fixed assets and stocks is removed from other revenues and expenses. Subsidy revenue is removed from other revenues and shown as a negative entry in inputs, so it does not affect operating surplus.

### Communication Industries

Communication industries provide essential support services to consumers, business and government. The sector is characterized by regulated markets and government enterprises. Most surveys are censuses with almost no undercoverage. Allocating communication services is very important for the consumer expenditure accounts and almost every industry has some communication services input requirement.

A percentage of the "estimated" portion of the data values is given below in Text Table 4 for output, intermediate inputs, net indirect taxes and Gross Domestic Product (GDP). This estimated percentage represents data which are not directly obtained from annual survey and/or administrative tax data. Estimates are based on periodic and partial information. Some examples are:

- 1) Upward adjustments to output, intermediate expenses and GDP for undercoverage.
- 2) Estimation of intermediate expense detail from partial information.

- 3) Application of adjustment factors to net and/or gross income from taxation data to match Census and occasional survey data.

#### 1. Telecommunication broadcasting

This industry includes establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 4811 Radio Broadcasting Industry  
 4812 Television Broadcasting Industry  
 4813 Combined Radio and Tel. Broadcasting Industry  
 4814 Cable Television Industry.

This industry is surveyed by two censuses<sup>2</sup> conducted by Statistics Canada with the Canadian Radio-Television and Telecommunications Commission, in accordance with the Accounts of the Canadian Association of Broadcasters and the Canadian Cable Television Association. The output of radio and television is basically survey-reported advertising revenues which are net of inter-establishment transactions. Both parts of the survey report for the programming year (Sept. 1 to Aug. 31). An additional year of data is needed to convert to calendar years. Survey revenues require no further adjustments. The output of cable television is mostly subscription revenues.

The pay-TV industry is not surveyed alone, so incidental revenue and expenditure detail must be estimated using cable TV data. Starting with 1983, an addition must be made for the unregulated pay television activity of cable TV establishments. This addition uses unpublished data for subscription, rental and sale margin revenues for converter equipment. After 1985, an addition is needed for new

<sup>1</sup> Statistics Canada, *National Income and Expenditure Accounts*, Volume 3, ch. 6. Catalogue No. 13-549 (Ottawa, 1975). *Input-Output Division, Statistics Canada, Size and Structure of the Public Sector Market, 1983, Sources and Methods*. (Ottawa, 1987).

<sup>2</sup> Statistics Canada, *Radio and Television Broadcasting Annual*, Catalogue No. 56-204 (Ottawa). *Statistics Canada, Cable Television Annual*, Catalogue No. 56-205 (Ottawa).

Text Table 4

Communication industries, 1986 estimates in millions of dollars with percentage estimated for each component.

	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost
Millions \$				
Communication Total % estimated	17,464 1%	4,616 42%	-400 1%	13,248 1%

advertising revenues of the incidental activities of pay-TV establishments. The remaining incidental revenues of both parts of the industry are earned mostly from the production of programs that result in sales revenues and distribution royalties.

Estimates of operating surplus, wages and salaries and SLI are developed mostly from survey data. For unregulated pay TV establishments, the operating surplus is based on survey-reported net profit and depreciation for non-cable TV operations. Pay-TV wages and salaries and SLI are estimated by assuming that they have input-to-revenue-ratios similar to those for cable operators. Intermediate inputs are based almost totally on the survey expense detail, which is reasonably comprehensive. Cable TV industry reporting units with less than 1,000 subscribers report only functional expense totals; these have been broken down using detail from the larger establishments. Intermediate inputs of pay TV are estimated from the larger cable TV operator's expenses. Additional splits of individual inputs are based on unpublished data from individual establishment reports for past years. The lack of expense detail in recent years for the Canadian Broadcasting Corporation data requires estimates based on extensive CBC reports from previous years. These disaggregation estimates are then added to the inputs of the rest of the radio and TV industry, and all input estimates are adjusted to calendar years.

## 2. Telecommunication carriers and other telecommunications

This industry includes establishments primarily engaged in activities classified to the following 1980 SIC industries:

SIC 482 Telecommunication Carriers Industry  
SIC 483 Other Telecommunication Industries.

This industry is covered by annual and quarterly censuses of telephone<sup>3</sup> and telecommunications<sup>4</sup> establishments as required by telephone agencies and commissions. The two parts of the industry are highly interrelated and often provide similar services. The output control totals are based on survey revenues, which are reported net of inter-establishment transfers for inter-utility calls. An addition to output is made for the production of new machinery and equipment produced by the establishments' own employees. This addition is based on capitalized wages and salaries reported in the survey, excluding own-account wages used for construction, which are related to the Input-Output construction industry. The operating revenue figure from the telephone survey, excluding charges to connecting systems and the deduction for uncollectible revenues, is used to estimate the output control. The annual telecommunications census has not been conducted for the last several years; as a result, the industry control for outputs is projected from quarterly survey data<sup>5</sup> and company annual reports.<sup>6</sup>

The surplus, wages and salaries and SLI are based on the same sources as the outputs mentioned above. Net operating income is adjusted to add back depreciation and to deduct taxes that should be part of operating expenses (e.g., property taxes). Intermediate inputs (printing of directories and indirect property taxes) are obtained from the survey. The property rental input estimate is based on tax data. Remaining inputs are projected from detail included in past surveys.

## 3. Postal service

This industry includes establishments primarily engaged in activities classified to the 1980 SIC 4841, postal service industry.

Data for this industry are obtained primarily from the annual reports of the Crown Corporation Canada Post. Also included is an estimate, using corporate<sup>7</sup> and unincorporated<sup>8</sup> tax data, for small independent rural mail carriers. Canada Post subsidies are excluded from the reported revenues. Canada Post revenues and expenses are reported for the fiscal year April 1 to March 31, and have been adjusted to calendar years.

The surplus, net income, wages and salaries and SLI estimates are based on the same source as output. The operating surplus is derived from operating revenues, less reported operating expenses, with depreciation and reported capital-type expense items added back. Up to 1983, most intermediate input data were specified using the vast amount of unpublished detail by line object code available from the Department of Supply and Services (DSS); the incorporation of Canada Post brought an end to this source. The expense detail in the Canada Post annual report breaks down all major expense items; remaining inputs are projected from previous DSS detail. Primary input costs for rural mail carriers are based on tax data; remaining inputs are assumed to be mostly gasoline, vehicle repair service and maintenance parts.

<sup>3</sup> Statistics Canada, *Telephone Statistics*. Annual, Catalogue No. 56-203 (Ottawa).

<sup>4</sup> Statistics Canada, *Telecommunications*. Annual, Catalogue No. 56-201 (Ottawa).

<sup>5</sup> Statistics Canada, *Communications*, Service Bulletin. Quarterly, Catalogue No. 56-001 (Ottawa).

<sup>6</sup> Telesat Canada, Annual Report.

<sup>7</sup> Statistics Canada, *Corporation Financial Statistics*. Annual Catalogue No. 61-207 (Ottawa).

<sup>8</sup> Revenue Canada Taxation, *Taxation Statistics*. Annual, (Ottawa), Table 9. Industry detail by two-digit SIC type fine occupation codes (FOCs) was derived from unpublished Revenue Canada machine-readable files. The Tax Record Access Sub-Division, Classification Systems Branch, Statistics Canada, also samples unincorporated data, but it covers only tax filers with business income (bypassing professional and commission income filers) and codes these to the four-digit 1980 SIC industry classification.

## Sources And Methods Common to All Industries

### Estimation of intermediate inputs

The approach to developing intermediate input estimates for all communication industries is basically the same. First, actual data for as many inputs as possible are obtained from surveys and related sources. A few inputs, such as rental of property and equipment, indirect taxes, and advertising, are available from tax sources. All the intermediate inputs and the primary inputs available in the individual industry descriptions are specified and the residual is derived by deducting these inputs from the output control. This residual is used to estimate remaining intermediate inputs. All remaining unspecified inputs for each industry are projected from the last Input-Output benchmark year by multiplying them by a composite index using price deflators<sup>9</sup> and constant dollar output. The resulting total of estimated inputs is compared with the residual of revenues over specified inputs. If the level and movement of the results are reasonably close, the projected inputs are used with minor proration to balance the input total. Adjustments are sometimes necessary for the spare parts and maintenance supplies commodity, to deduct the portion of materials used by employees to do repair construction, which is classified in the Input-Output construction industry and is thus part of the repair construction input. If the residual for intermediate inputs differs drastically from the projected input estimates, then further analysis is conducted. This includes checking consistency, survey sources, definitions, adjustments, deflators, etc. Discrepancies in each industry's framework are edited through this check and the commodity balance procedure.

A final adjustment is made to the value of each material input for inventory valuation (IVA) using the change from the previous year in the average price (weighted by the material inputs) and the change in survey-reported total material inventories. In normal periods of rising prices, the value of materials is increased by the adjustment, and surplus is decreased.

### Adjustments to net revenues to derive operating surplus

Industry survey data are used for as many Input-Output industries as possible. A combined total for surplus and unincorporated net income is calculated by deducting the surveyed operating expenses from reported operating revenues. When survey data are unavailable, corporate tax files<sup>10</sup> are used to estimate surplus. Unincorporated tax files<sup>11</sup> are used to make estimates of unincorporated net income. Industry surveys do not collect data separately for corporations and unincorporated businesses, so an estimate (see following section) of net income for unincorporated business must be deducted from the survey data to arrive at the surplus. Also, to conform to Input-Output concepts, surplus estimates from the surveys need adjustment to add back subsidies shown as negative expenses, net bad debts, capital items and charitable

donations charged to operating expenses, and insurance claims received but not reported. It is also necessary to deduct the expenditures on stock and bond commissions and net bank service charges not reported as operating expenses from survey net revenues. Also deducted are price increases in the book value of inventories during the year (the IVA) and depreciation of capital leases that should be charged to other industries but are included with own-asset depreciation. Data on capital items charged to current expenses come from capital expenditure information detail. Depreciation of capital leases, charitable donations and net bad debts are obtained from taxation statistics.<sup>12</sup> Insurance claims, stock and bond commissions and net bank charges are derived from detail for finance industries. The IVA for each industry is based on reported inventories from the survey or tax file data.

	Additions	Deductions
Net Revenue (survey data)	Subsidies Net Bad Debt Capital Items Charitable Donations Insurance Claims	Net Income Unincorp. Stock and Bond Comm. Net Bank Charges Inventory Valuation (IVA) Depreciation of Leases
		Surplus (adjusted)

### Gross and net income of unincorporated business

Net income of unincorporated business is based on several T-1 unincorporated tax files.<sup>13</sup> The control total for the whole transport, communications and utilities industry is published by Revenue Canada and is available at the two-digit level of SIC on unpublished data tapes. The Revenue Canada two-digit industry data are further broken down into three-digit Input-Output industries using an unpublished file developed by the Tax Record Access Sub-Division of Statistics Canada. This file is based on a sample of tax filers whose business income is coded to the four-digit 1980 SIC. Those unincorporated tax data are used to develop estimates for output and depreciation for those industries for which survey data are lacking.

### Wages and salaries and supplementary labour income (SLI)

The salaries and wages and SLI estimates developed for each industry must be adjusted to accommodate labour income definitions and Input-Output concepts. An estimate of directors' fees, which are often not reported, is added to most of the survey-derived data for wages.

<sup>9</sup> Statistics Canada, *The Input-Output Structure of the Canadian Economy in Constant Prices*. Catalogue No. 15-202 (Ottawa, 1987).

<sup>10</sup> See footnote 7, p. 22.

<sup>11</sup> See footnote 8, p. 22.

<sup>12</sup> See footnote 7, p. 22.

<sup>13</sup> See footnote 8, p. 22.

Estimates of SLI are based on two sources. Whenever new survey data are of high quality, they are used for the supplementary labour income expense. SLI is defined as the premiums paid by the employer for employee social and welfare benefit plans. It does not include such items as automobile, meal, accommodation and travel expenses. The alternate source is a projection using the SLI to salaries and wages ratio. This ratio comes from the Labour Cost Survey of the transport and utilities industries, last conducted in 1978.<sup>14</sup> The survey provided unpublished detail itemizing all elements of labour cost by three-digit 1970 SIC. The total wages and salaries and SLI for the transport and utilities industry must then be reconciled with labour income control totals from Labour Division of Statistics Canada. All final industry wages and SLI must be adjusted to remove the value of the industry's

own employees performing new and repair construction which, in the Input-Output framework, is part of the construction industry. Unpublished labour income data for own-account new and repair construction are available for most three-digit SIC industries from the capital and repair expenditures survey.<sup>15</sup> This construction labour income is split between wages and salaries and SLI using the SLI to wages and salaries ratio for the industry as a whole. The result is then deducted from the control total of wages and salaries and SLI to get final adjusted totals for each industry.

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<sup>14</sup> Statistics Canada, *Employee Compensation in Canada All Industries*, 1978. Catalogue No. 72-619 (Ottawa, 1980).

<sup>15</sup> Statistics Canada, *Construction in Canada. Annual*, Catalogue No. 64-201 (Ottawa).

## Chapter 3

### Wholesale Trade Industries

In 1986, the wholesale trade (WT) industry handled \$235.6 billion worth of sales, generating \$34.5 billion of gross output. The sector's total GDP was \$23.3 billion, 6.3% of business sector GDP. Trade margins as defined below constitute the largest part of the sector's gross output.

This chapter summarizes basic sources and methods used to estimate the outputs, inputs, GDP and commodity margins of the WT industry, and Chapter 4 will do the same for the retail trade industry. In analyzing economic interdependence, it is necessary to maintain a link between the original sources of supply of a good (that is, domestic industries or imports) and the intermediate or final consumers of the good. Therefore, the wholesale and retail trade industries are not shown as consumers of the goods which they purchase nor as producers of those which they sell; their trading outputs are defined as the gross margins on goods traded. Inputs are defined accordingly. This definition of trade output thus represents sales less the costs of goods purchased for resale. Goods are shown as being routed directly from producers to users, in producers' prices, with users shown as buying trade margins separately and not as part of the value of goods purchased.

#### 1. Delineation of industry and commodity

The difference between retail and wholesale is based on the "class of customer" activity criterion. If a larger share of the gross margin is obtained from sales to retailers, institutional or professional users than from sales to households, the establishment and its margin are classified to wholesale trade. If a wholesale establishment makes some retail sales to households, the margin generated is counted as wholesale. Similarly, if a retail store performs wholesale-type activity, the margin is counted as retail.

However, certain businesses are treated as wholesale no matter what type of buyers they sell to. These businesses deal mainly in office furniture, lumber and building materials, farm machinery, equipment and supplies, commercial motor vehicles, fuel oil and all types of industrial and commercial machinery and equipment.

Trade margins are also produced by industries such as manufacturing and services. These margins are classified based on the general character of the transactions. For example, all margins generated in the manufacturing and mining industries are considered wholesale, while most margins generated in the service industries are considered retail.

### Wholesale trade coverage

Wholesale margins are generated by establishments primarily engaged in buying and selling merchandise to retailers; to industrial, commercial and professional users; to other wholesalers; to export markets; and to farmers for use in farm production. Or, establishments may act as agents in such transactions. These establishments are basically of two types; wholesale merchants, and agents and brokers.

#### (a) Wholesale merchants

These establishments are primarily engaged in buying and selling merchandise on their own account. Consignment or commission sales constitute a small portion of their business. Generally they take title to the merchandise they handle. Data gathered by the Wholesale Trade Survey (WTS)<sup>1</sup> on other major types of operations are lumped in this category. These operations include manufacturers' sales branches and offices maintained apart from manufacturing plants and used primarily for selling or marketing products at the wholesale level. Measuring trade margins for this group presents a problem when it is not known how prices reported on the survey questionnaire differ from shipment prices recorded in the Census of Manufactures. However, it is assumed that the Census of Manufactures shipment prices exclude margins earned by sales branches, so that these margins constitute the output of these wholesale establishments.

Another major type of operation in this category is the primary product dealer. These establishments mainly purchase for resale primary products such as grain, livestock, raw furs, fish, leaf tobacco, fruit and vegetables etc, from Canadian producers such as farmers, loggers, fishermen and trappers. They may also act as agents in such transactions. Depending on the nature of their activities, co-operative marketing associations and marketing boards are termed either merchant or agent. These establishments deal primarily with farm products.

Included in the Wholesale Trade Survey are the Canadian Wheat Board and wheat pools that handle grain on behalf of the Wheat Board. However, to calculate I.O. output, wheat pools are excluded from wholesale trade and treated as part of the storage industry. The output of the Canadian Wheat Board is defined as being equal to total operating expenses, including depreciation and interest paid. This output is considered to be a margin because the Board is an intermediary between the agriculture industry and buyers.

<sup>1</sup> Statistics Canada, Wholesale Trade Statistics, Wholesale Merchants, Agents and Brokers, 1986, Annual, Catalogue No. 63-226 (Ottawa, 1989).

The final major operations included in this category are petroleum product dealers who have facilities for wholesale handling and storing of large quantities of petroleum products. These operations are classified as either wholesale merchants or agents and brokers marketing petroleum products.

### (b) Agents and brokers

These operations are primarily engaged in buying and/or selling products owned by others for a commission. The major portion of output for agents and brokers is obtained from commissions earned from handling goods on behalf of others. In 1986, the volume of trade handled by agents and brokers was \$36.0 billion, of which \$34.2 billion was the value of goods handled on commission, generating gross commissions of \$1.0 billion. The remaining \$0.8 billion were other receipts, such as the sales of goods held on own account and the margin thereof, and receipts from other subsidiary activities.

## Other wholesaling

In addition to wholesaling done by establishments classified to the trade industry, establishments classified to the manufacturing industries perform a substantial volume of wholesaling as a secondary activity. Many manufacturers, in addition to their domestic manufacturing activity, act as wholesale merchants for commodities (often imported from their foreign affiliates) that supplement, complement or are associated with their product lines. Margins generated by the sales of these "goods purchased for resale in the same condition" (GPRS) are included in the total output of the manufacturing establishments. In 1986, the total GPRS margins generated by manufacturing establishments amounted to \$5.1 billion. Some establishments identify the nature of the GPRS sales. For establishments which do not identify the nature of GPRS sales or their buyers, it is assumed that GPRS product lines fall under the same commodity classification as goods of own manufacture.

## The non-trade activities of wholesale trade

The major source of revenue for establishments engaged in wholesale trade is the purchase and sale of goods. However, other activities such as repairs, rentals, etc., also contribute substantial revenue. Trade establishments often perform activities that can be regarded as manufacturing or services, e.g., packaging, furniture re-upholstery, preparing meals in delicatessens, etc. Of an estimated total output of \$34.5 billion for wholesale trade in 1986, revenues generated from subsidiary manufacturing activities, repairs, rental of office equipment, machinery and equipment, data processing, royalties, and rental of real estate amounted to \$5.0 billion - 14.5% of the total.

## 2. Overview

For the period 1961 to 1971, the quinquennial Census of wholesale trade and tax data for corporate and unincorporated sectors were used. The Census provides basic data on operating revenues, gross margins, total operating expenses, class of customer, etc. The 1961 Census<sup>2</sup> was comprehensive in terms of expense detail. The 1966 Census<sup>3</sup> did not collect expenses except for salaries and wages. On the other hand, for the 1971 Census<sup>4</sup>, in addition to the published data, detailed tabulations, especially on operating expenses were available. The 1961 Census provided the commodity distribution of sales by kind-of-business which is crucial in estimating margins by commodity. These data sources were used as benchmark estimates for industry outputs and inputs for 1961, 1966 and 1971. Output estimates for intervening years were interpolated between the benchmarks based on monthly sales information. These data were supplemented by corporate data from the Industrial Organization and Finance Division and unincorporated data from Revenue Canada.

Corporation financial data are collected on a company basis (as opposed to an establishment basis for the Census) and provide detailed information by SIC on revenue items, operating expenses and surplus items. They are therefore used extensively to estimate the operating surpluses and input structures of industries. The unincorporated tax data from Revenue Canada are available by fine occupational codes(FOC) and provide information by occupation on gross and net business, commission, professional and rental incomes. These are mostly used to estimate the net income of unincorporated business. In addition to these sources, the Tax Record Access programme(TRA) provides data by three digit SIC codes on gross and net business incomes, and on selected expenses such as salaries and wages and depreciation for unincorporated business. Tax data are used to split total sales of the industry between corporate and unincorporated segments when this information is not completely available from surveys.

From 1973 to 1980, the Industry Division conducted biennial surveys of the wholesale trade industry; agents and brokers were covered in even-numbered years, while wholesale merchants (including petroleum bulk stations, primary product dealers and manufacturers' sales branches) were covered in odd-numbered years. From 1981, total coverage of the wholesale establishments has been provided by the annual Wholesale Trade Survey (WTS) using survey and administrative (tax) records.

<sup>2</sup> Statistics Canada, 1961 Census of Canada, Merchandising: Wholesale Trade, VOL. VI (pt 2), (Ottawa, 1966).

<sup>3</sup> Statistics Canada, 1966 Census of Canada, Wholesale Trade Establishments, Catalogue No. 97-627 (Ottawa, 1972).

<sup>4</sup> Statistics Canada, 1971 Census of Canada, Wholesale Trade, Business Establishment General Statistics, Catalogue No. 97-725 (Ottawa, 1977).

Text Table 5

**Wholesale Trade Industries, 1986. Totals in millions of dollars, with percentage estimated for each component.**

	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost
Millions \$				
Wholesale Trade % estimated	34,518 2%	10,902 72%	304 20%	23,312 26%

In the WT survey, questionnaires are mailed to single location businesses with revenues of \$1 million or more; all multi-location and multi-establishment merchants; and all agents and brokers (except oil agents), irrespective of their size. Data on the remaining businesses are taken from the administrative records.

The annual and biennial surveys provide data on volume of trade, sales and receipts, purchases, inventories, wages and salaries, and class of customer information by establishment and location. Data from the 1981 survey have been used as benchmarks for industry outputs for 1981. Estimates of output for the unsurveyed years between 1971 and 1981 are primarily based on the biennial surveys of the wholesale trade industry. Estimates of the wholesale trade industry after 1981 are based on the annual survey. Reliance is also placed on other data sources mentioned below.

For salaries and wages and SLI, the control totals provided by the Labour Division have been adopted with some adjustment. For operating surplus and net income of unincorporated business, the 1971 benchmarks were calculated from Census data and in some cases adjusted based on tax data. A relationship between the Census adjusted ratios and the ratios from the tax data was established. From 1971 onwards, the adjusted Census ratios were projected using movement in the operating ratios from tax data, providing a preliminary estimate of operating surplus and net income. Adjustments were made to these estimates to arrive at the I.O. concept.

A percentage value for the "estimated" portion of the data for the wholesale industry is given in Text Table 5 for gross output, intermediate inputs, net indirect taxes and Gross Domestic Product (GDP). This represents the percentage of data value which is not directly obtained from annual survey and/or administrative data. Estimation is based upon periodic and partial information. Some examples are:

- 1) Upward adjustments to production, intermediate expenses and GDP for undercoverage.
- 2) Estimation of intermediate expense detail from partial information.

3) Application of adjustment factors to net and/or gross income from taxation data to match Census and occasional survey levels.

### 3. Sources and methods

For the wholesale trade industry, the first step in the calculation is to estimate outputs, inputs and the GDP components of the wholesale industry. The output of trade margins is allocated to commodities and to purchasing industries and categories of final demand. The procedures used to accomplish this are discussed in subsequent sections.

#### Wholesale trade methodology

As stated, the 1961 Census provided comprehensive data needed to build benchmark estimates of outputs and inputs for 1961. The published 1971 Census data with additional information on operating expenses retrieved from the 1971 Census files were used to estimate the 1971 outputs and inputs. The 1966 Census, while not as comprehensive as the 1961 and 1971 Censuses, was used to provide an output level for 1966. Estimates for intervening years were interpolated from sales based on the monthly series. The 1971 census data on the operating expense structure for the corporate and unincorporated sectors were used to estimate the inputs of wholesale trade. Data gaps for estimates of gross margins, GDP, inputs, etc. were filled using administrative data.

The 1981 benchmark estimates were also based on the 1981 survey. Estimates of outputs for the intervening years between 1971 and 1981 were based on interpolation between the biennial surveys adjusting in areas where there were weaknesses in the data. Estimates of inputs and GDP items were projected from the 1971 benchmark estimates, based on administrative data and on a sample of the operating expenses structure of selected establishments from the corporate sector. These were supplemented with administrative data on the unincorporated sector. Administrative data were used to calculate GDP aggregates.

The basic data source since 1981 has been the annual Survey of Wholesale Establishments.<sup>5</sup> In the WT survey, data are collected from questionnaires mailed to wholesale establishments and from administrative records. The Questionnaire is mailed to all single-location businesses with revenues of \$1 million or more; all multi-location and multi-establishment merchants; and all agents and brokers (except oil agents), irrespective of their revenue. Principal statistics of oil agents are generally collected directly from oil companies.

Data for small wholesale merchant establishments are obtained from the administrative records of Revenue Canada, and from the Industrial Organization and Finance Division (IOFD) of Statistics Canada. These data are used to produce aggregations or summary calculations. To reduce response burden, businesses with annual revenues of less than \$10,000 are excluded from the survey.

The following section describes in detail the data sources and the estimating procedures used for the outputs, inputs and GDP aggregates from 1971 to the present period.

## (1) Estimating output

### Gross margins

The WT survey provides net sales and other receipts for wholesale merchants and for agents and brokers. The growths in these sales are compared to growth rates from the monthly sample survey of wholesale merchants,<sup>6</sup> and to the growth pattern of total revenues by SIC in *Corporation Financial Statistics* data, which are on a company basis. The growth in the commodities' supply handled by these different businesses is also examined. Adjustments for undercoverage, misreporting, etc., are made in the survey. These sales estimates become the starting point for estimating the output of wholesale trade.

From sales, cost of goods sold is subtracted to estimate gross margins. However, reported data sometimes do not reflect the true cost of goods sold because all the costs associated with the purchase of goods (e.g., insurance, commissions paid to buying agents, import duties, and other related costs) are not included in the purchase price. If the cost of transportation is paid separately by a wholesale trade establishment to a common or contract carrier, this is treated as part of operating expenses, not cost of goods purchased, so margin output is overstated.

Gross margins may also be overstated for manufacturers' sales branches. This arises when the price of goods transferred from the manufacturing establishment is valued at the shipment price instead of the selling price, which reflects costs associated with the goods. The

ratios of margins to sales by SIC are therefore compared to ratios reported at the company level for similar kinds-of-business in the Industrial Organization and Finance Division's data. Observed differences in data between sources are investigated and adjusted. The result of the exercise is a set of gross margins by store type and by SIC. These are "gross" margins and include margins from non-trading activities, for which output is defined as total receipts. The gross margin on sales of manufactured goods (sales less cost of sales) is removed from the estimated margin. This is done because the "cost of sales" definition for the survey questionnaire does not distinguish between cost of sales of trade and cost of sales of non-trade activity.

### Non-trade activities of wholesale trade

The Wholesale Trade Survey does not produce a detailed breakdown of the outputs and inputs of manufactured goods but it does produce information on sales of goods of own manufacture by establishment. Based on data collected in 1979, establishments reporting sizable manufacturing activity were asked about the nature of their production. Some establishments had misrepresented their activity, and were excluded from the totals. Through this process, the level of manufacturing activity by SIC was estimated. Estimates were also made of the composition of the goods produced and of the inputs used. Patterns of inputs associated with outputs of such goods from primary manufacturing industries were also examined to determine a reasonable estimate of material inputs for manufactured goods. This pattern of outputs and inputs is examined periodically to capture new activities as they emerge.

The previous section described the different types of receipts obtained from non-trade activities. The basic data source in this area is detailed tabulations extracted from the survey data files. Receipts from rentals and other services reported in corporation financial data by SIC code are also used. One problem is that revenues from repairs, as reported in the survey, may include the cost of materials as well as labour.

### Inventory valuation adjustment

An important adjustment made on the output side of the trade industry is the revaluation of inventories. Accounting practices differ from establishment to establishment, but for national accounting purposes, inventories must be revalued in relation to average market price prevailing over the period. This revaluation of inventories is calculated using sub-annual data of the National Accounts and Environment Division.

<sup>5</sup> See footnote 1, p. 25.

<sup>6</sup> Statistics Canada, *Wholesale Trade, Monthly*, Catalogue No. 63-008 (Ottawa).

Gross margins by SIC code are adjusted for the sales of manufactured goods, receipts from other activities, and inventory valuation adjustment (IVA) by SIC code. This produces "net" margins that become the control totals of margins by SIC code.

## (2) Estimating GDP

The Survey of Wholesale Trade does not collect information on GDP components, except for salaries and wages and employee benefits. The 1971 Census<sup>7</sup> provided data on operating expenses together with net profit ratios by kind-of-business. For subsequent years, corporate tax data are used to obtain surplus ratios, net operating expense ratios, GDP by SIC code, expense breakdown by type of operating expense, etc. These components are estimated year by year. The company/establishment mix inherent in the Industrial Organization and Finance Division data means data are not on a pure establishment basis. The data are useful as projectors/estimates once the company/establishment relationship has been established for the benchmark year.

In estimating the GDP, the first step is to determine salaries and wages and SLI. Totals supplied by the Labour Division (from T-4 data) are used, with some adjustments specific to the industries. For example, salaries and wages from the Labour Division's 1986 sectorial breakdown had to be transferred from services to trade (particularly to wholesale trade) to account for companies that had been reclassified from services to wholesale trade. SLI data are obtained from the Labour Division and adjusted similarly.

To estimate the operating surplus and net income components of the GDP, total net sales of the wholesale trade industry are split between corporate and unincorporated segments. This split is determined from detailed tabulations in the wholesale survey data files. Note that the level of sales for the unincorporated sector is much higher than the gross business income reported in the Revenue Canada publication on individual tax returns.<sup>8</sup>

The operating surplus for 1971 was calculated from the Census data by SIC. Results were reviewed using ratios of operating surplus to total revenues based on corporate tax data, and adjusted where necessary. Through this process, the relationship between the ratios generated from establishment data and those obtained from company data was established. Since 1971, operating surplus has generally been estimated using the movement of the ratios of surplus to revenue from tax data and applying them to establishment data.

These procedures are applied to the sales by SIC of the corporate segment to produce the estimate of the operating surplus. For the unincorporated segment, the surplus estimate is obtained by estimating depreciation and the interest portion of operating expenses by SIC.

Special adjustments to the operating surplus estimate include current account operating subsidies that are not included in the revenue data, and exclude depreciation on leased assets. Other adjustments reflect inventory valuation changes, add the claims portion of insurance, and remove imputed interest and bank charges and commissions on stocks and bonds.

Another important part of the GDP estimate is the net income of unincorporated businesses. The Revenue Canada publication on individual tax returns<sup>9</sup> provides reported net incomes. However, 1971 Census results suggested there was considerable under-reporting. An independent estimate of the net income of this segment is based on reported unincorporated sales. Separate estimates of net income from net sales and from the commissions portion of wholesale merchants, and agents and brokers are made.

To derive net income, the 1971 income ratios by SIC for unincorporated businesses were projected from net/gross business income ratios reported in Revenue Canada data for Fine Occupational Codes (FOCs). More recently, however, the Tax Record Access (TRA) data transcribed into SIC codes (again generating net/gross business income ratios) have been used to estimate net income SIC code for the wholesale trade industry.

The sum of estimates of salaries and wages and SLI, operating surplus and net income comprise the GDP at factor cost for the industry, which accounted for 67.5% of the Input-Output production value of wholesale trade in 1986. Salaries and wages and SLI accounted for 69.1% of the GDP.

## (3) Estimating the input structure of wholesale trade

After estimating the GDP of WT, the next step is to allocate intermediate inputs. As discussed before, inputs of wholesale trade related to manufacturing are estimated separately. To these are added estimates of inputs generated by establishments' wholesaling activity. The Wholesale Trade Annual Survey does not collect information on operating

<sup>7</sup> See footnote 4, p. 26.

<sup>8</sup> Revenue Canada Taxation Statistics, 1988 Edition. Analyzing the returns of individuals for the 1986 taxation year, and miscellaneous statistics (Ottawa, 1988).

<sup>9</sup> See footnote 8, p. 29.

expenses of wholesale establishments. These data were tabulated by establishment from 1971 Census data files and used as the basis for the input structure of the wholesale trade industry from 1971 onward. Patterns of expenses for 1971 were separated for the corporate and the unincorporated segments. Then the expense patterns were applied to sales by kind-of-business and/or projected forward with price indices, to estimate total operating expenses for the post-1971 period. Some expense categories had to be further disaggregated using information from other sources. Operating expense data obtained from samples of administrative records were used. The movement of these data over time is used to estimate the input structure. Estimates of subsidies are based on an analysis of Public Accounts information. Estimates of repair construction, government goods and services, royalties, franchises, imputed bank charges, etc. are available by industry from other sources in the Input-Output Division.

#### (4) Estimating commodity sales and margins

The last census to provide data on the commodity distribution of sales was conducted in 1961.<sup>10</sup> This census provided commodity sales for kinds-of-business by major type of operation e.g., wholesale merchants, agents and brokers. This commodity structure has since been updated to account for changes in classification since 1961. The result is a pattern vector of 28 commodity groupings by SIC, that is used to estimate commodity sales by SIC. Each of the 28 groupings is expanded into a number of commodities that go through the wholesaling process. Using a store-type ratio of margin to sales, or a weighted average of a number of store types, each grouping is assigned a margin ratio appropriate to the commodities included in the group. This is necessary because few wholesale margin ratios by commodity are available from existing sources. Therefore, commodity margin rates are assumed to be similar to those for the kind-of-business most important in handling the commodity.

To estimate margins, sales of wholesale trade by SIC are first distributed over the sales pattern to obtain an estimate of sales by commodity groups. Then margins are estimated by broad commodity groupings using pre-established margin ratios.

This produces a set of margins for commodity groups by SIC. The margin totals by SIC come close to control totals of wholesaling margins by SIC, referred to in previous sections. Differences in the control totals are prorated back by SIC to obtain estimates by commodity groups.

Each commodity group contains a number of Input-Output commodities over which the margins must be spread. This is done using a weighting pattern based on the supply of Input-Output commodities within each group.<sup>11</sup> The total intermediate and final demand uses are preliminary estimates. The next step is to add wholesale margins produced from non-trade establishments, particularly the GPRS margins from manufacturing. These margins are added by Input-Output commodity to produce a total for each commodity. This estimate of trade margins is very preliminary and must be tested against the other variables in the commodity balancing process; however it is the first approximation of the wholesale trade margin by commodity.

The distribution of commodity margins between intermediate and final demand must reflect variations among customers. Wholesalers may sell to a large number of users, and have varying discount rates (and therefore margin rates) for different classes of customers. For example, the discount rate for a large retailer might be greater than that for a small builder. The class of customer information gathered in the WT Survey is also used to estimate margins on exports as opposed to intermediate use. These factors are taken into account in distributing trade margins to different users.

<sup>10</sup> Statistics Canada, 1961 Census of Canada, Wholesale Trade, Establishments, Analysis of Sales, Vol. VI, pt.2, Catalogue No. 97-515 (Ottawa, 1967).

<sup>11</sup> Supply for wholesale is defined as production plus imports adjusted for inventory change.

## Chapter 4

### Retail Trade Industries

In 1986, the retail trade (RT) industry handled \$159.4 billion in sales, generating \$42.5 billion in gross output. Sales of retail trade stores accounted for \$154.4 billion of the total; additional retailing sales were made by brewers' retail outlets and by non-store establishments such as direct sellers, vending machine operators, etc. The sector's gross domestic product (GDP) was \$28.3 billion, or 7.7% of business sector GDP. Trade margins constitute the largest part of the sector's gross output. Retail margins are the trading output of retail trade, which is sales of goods less the cost of goods purchased for resale.

This chapter summarizes basic sources and methods used to estimate the outputs, inputs, GDP and commodity margins of the RT industry. To analyze economic interdependence, it is necessary to link the original sources of supply of a good (that is, domestic industries or imports) and the intermediate or final consumer of the good. Therefore, wholesale and retail trade industries are not shown as consumers of the goods they purchase nor as producers of those they sell; rather, their trading outputs are defined as the gross margins on goods traded, with the inputs defined accordingly. This definition of trade output represents sales less the cost of goods purchased for resale. Thus goods are shown as being routed directly from producers to users. Users are shown as buying trade margins separately and not as part of the value of goods purchased.

#### 1. Delineation of industry and commodity

Trade establishments are classified to either the wholesale or the retail trade industry according to the proportion of their total gross margin that is obtained from wholesale or retail sales. If a wholesale establishment makes some retail sales to households, the margin generated is counted as wholesale; if a retail store performs wholesale-type activity, the margin is counted as retail. The delineation between retail and wholesale is based on the "class of customer" activity criterion. If a larger share of the gross margin is obtained from sales to retailers, institutional or professional users than from sales to households, the establishment and its margin are classified to wholesale trade.

Trade margins are also produced by industries such as manufacturing and services. These margins are classified based on the general character of the transactions. For example, all margins generated in manufacturing and mining industry are considered wholesale, while most margins generated in the service industries are considered retail.

#### Retail trade coverage

Retail trade margins are generated by establishments primarily engaged in selling merchandise for personal, household or farm consumption. In addition

to ordinary retail stores such as grocery and hardware stores, non-traditional types of retail activities are also included here.

In recent years, a significant growth in business activity has taken place outside retail stores. These "non-store" channels of distribution include book and record clubs, mail order agencies, catalogue sales offices (excluding those operated by department stores), vending machine operators, home provisioners, door-to-door sales by representatives of cosmetic firms (including the self-employed), vacuum cleaner manufacturers, publishers of newspapers, magazines and encyclopedias, etc. Book stores on the premises of post-secondary educational institutions, whether or not they are owned and operated by the institutions, are also in this category.

In addition to the above, certain retail outlets operate within larger locations. These outlets are concessions or leased departments -- separately-owned businesses operated as departments within the premises of other businesses, usually under license or contractual agreement. Continuing the practice adopted for the 1966 Census, all retail and service trade concessions within department stores are included in the location totals; however, concessions in all other retailing and service environments are treated as distinct and separate locations. In the establishment series, establishments operating concessions are asked to provide the full range of statistics for all locations, including those situated in department stores. They are classified, in their entirety, based on major activity.

#### The non-trade activities of retail trade

As in wholesale trade, the major source of revenue for retail trade establishments is the purchase and sale of goods. However, other activities such as repairs, rentals, etc., generate substantial revenue. Retail trade establishments often perform non-trade activities such as re-upholstering furniture, preparing meals, etc.

The major non-trading activities of retail trade consist of: repairs, especially to automobiles, machinery and equipment, televisions and appliances, video cassette recorders, furniture and jewellery; rental/lease of automobiles, televisions, video cassettes; and rental of premises (e.g., to concessionaires). Most manufacturing in the retail sector takes place in small bakeries and re-upholstery establishments, all of which were transferred to the retail trade classification of industries under the 1980 SIC. Many retail establishments operate cafeterias, restaurants and similar eating operations for which an output of meals and inputs of cafeteria supplies (encompassing all estimated inputs associated with the output) are estimated. Retail stores also buy live animals to produce meat, hides and skins. Manufacturing activity of retail trade uses textile materials to produce clothing. In 1986, of the \$42.5 billion total output of retail trade, \$8.2 billion or 17.7% was accounted for by such non-trading activities.

## 2. Overview

For the period 1961 to 1971, the quinquennial Census of retail trade and tax data for the corporate and unincorporated sectors were used. The Census provides basic data on operating revenues, gross margins, total operating expenses, class of customer, etc. The 1961 Census<sup>1</sup> was comprehensive in terms of expense detail. The 1966 Census<sup>2</sup> did not collect expenses except for salaries and wages. On the other hand, for the 1971 Census<sup>3</sup>, in addition to the published data, detailed tabulations, especially on operating expenses were available. The 1961 and 1966 Census and the 1968 Retail Commodity Survey<sup>4</sup> provided the commodity distribution of sales by kind-of-business which is crucial in estimating margins by commodity. These data sources were used as benchmark estimates for industry outputs and inputs for 1961, 1966 and 1971. Output estimates for intervening years were interpolated based on monthly sales information which was updated in the intercensal revisions<sup>5,6</sup>. These data were supplemented by corporate data from the Industrial Organization and Finance Division and the unincorporated data from Revenue Canada.

For 1972 to 1982, the survey of retail trade<sup>7</sup> and the annual survey of Retail Chain and Department Stores<sup>8</sup> were used. For more recent years, total coverage of the retail trade industry is provided by the Annual Retail Trade Estimates<sup>9</sup> from 1982 using survey and administrative (tax) records. The annual surveys provide data on volume of trade, sales and receipts, purchases, inventories, wages and salaries, and class of customer information based on establishment and location. They do not provide any data on other operating expenses or GDP inputs except for salaries and wages. Data from the 1982 survey have been used as benchmarks for industry outputs for 1982. Estimates of output for the intervening years between 1971 and 1982 are primarily based on the interpolation using the monthly surveys of the retail trade industry. Estimates of the retail trade industry after 1982 are based on the annual survey. Sets of operating ratios of margins and operating expenses from occasional surveys for specific store types such as drug stores, hardware stores, florists' stores, etc., are incorporated in the estimates where possible. These are listed in greater detail in following sections. Other data sources mentioned below are also used.

These data are augmented with annual tax data for the corporate and unincorporated segments of the industry. Corporation financial data are collected on a company basis (as opposed to an establishment basis for the Census) and provide detailed information by SIC on revenue items, operating expenses and surplus items. They are therefore used extensively to estimate the operating surplus and input structure of industries. Unincorporated tax data from Revenue Canada are available by fine occupational codes(FOC), and provide information by occupation on gross and net business, commission, professional and rental incomes. These are mostly used to estimate the net income of unincorporated business. In addition, the Tax Record Access programme (TRA) provides data by three digit SIC codes on gross and net business incomes, and on selected expenses such as salaries and wages and depreciation for unincorporated business. Tax data are used to split total sales of the industry between the corporate and unincorporated segments when this information is not available from surveys.

For salaries and wages and SII, the control totals provided by the Labour Division have been adopted with some adjustment. In the case of operating surplus and net income, the 1971 benchmarks were calculated from the Census data, which were adjusted in some cases based on administrative tax data for the corporate and unincorporated segments. Then a relationship between the Census adjusted ratios and

<sup>1</sup> Statistics Canada, 1961 Census of Canada, Merchandising: Retail Trade, VOL VI (pt 1) (Ottawa, 1966).

<sup>2</sup> Statistics Canada, 1966 Census of Canada, Retail Trade General Statistics, Catalogue No. 97-607 (Ottawa, 1969).

<sup>3</sup> Statistics Canada, 1971 Census of Canada, Retail Trade, Business Establishments General Statistics, Catalogue No. 97-707 (Ottawa, 1977).

<sup>4</sup> Statistics Canada, Retail Commodity Survey, 1968, Occasional, Catalogue No. 63-518 (Ottawa, 1971).

<sup>5</sup> Statistics Canada, Retail Trade, Revisions to 1961-1966 Intercensal Estimates, Catalogue No. 63-517 (Ottawa, 1971).

<sup>6</sup> Statistics Canada, Retail Trade, Revisions to 1966-1970 Postcensal Estimates, Catalogue No. 63-519 (Ottawa, 1971).

<sup>7</sup> Results of the Survey for 1982-84 have not been published; detailed tables on sales, cost of sales, class of customer, etc., were available from the Industry Division of Statistics Canada for use in the CSNA. Starting with 1985, data are available in Statistics Canada, Annual Retail Trade, 1986, Annual Catalogue no. 63-223. (Ottawa, 1989).

<sup>8</sup> Statistics Canada, Retail Chain and Department Stores, Annual, Catalogue No. 63-210 (Ottawa).

<sup>9</sup> See footnote 7, p. 32.

**Text Table 6**

**Retail Trade Industries, 1986 Totals in millions of dollars, with percentage estimated for each component**

	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost
Millions \$				
Retail Trade % estimated	42,482 2%	13,405 65%	807 30%	28,269 20%

the ratios from the administrative data was established. Beginning in 1971, the adjusted Census ratios were projected forward using the movement of operating ratios from the tax data, to provide a preliminary estimate of the operating surplus and net income. Adjustments are made to satisfy national accounting concepts.

A percentage value for the estimated portion of the data for the retail trade industry is given in Text Table 6 for gross output, intermediate inputs, net indirect taxes and Gross Domestic Product (GDP). This represents the percentage of data which is not directly obtained from annual survey and/or administrative data. Estimates are based on periodic and partial information. Examples are:

- 1) Upward adjustments to production, intermediate expenses and GDP for undercoverage.
- 2) Estimation of intermediate expense detail from partial information.
- 3) Application of adjustment factors to net and/or gross income from taxation data to match Census and occasional survey levels.

### 3. Sources and methods

The first step in the industry calculation involves estimating the outputs, inputs and the GDP components of the retail trade industry. The output of these trade margins is allocated to commodities. The final step is to allocate these commodity totals to purchasing industries and categories of final demand. Procedures used to accomplish this are discussed in the following sections.

#### Retail trade methodology

As stated, the 1961 Census provided comprehensive data needed to build benchmark estimates of outputs and inputs for 1961. The published 1971 Census data with additional information on operating expenses retrieved from the 1971 Census files were used to estimate the 1971 outputs and inputs. The 1966 Census, while not as comprehensive as the 1961 and 1971 censuses, was used to provide an output level for 1966. Estimates for intervening years were interpolated from sales based on the monthly series. The 1971 Census data on the operating expenses structure for the corporate and unincorporated sectors were used to estimate the inputs of retail trade. Data gaps for estimates of gross margins, GDP, inputs, etc. were filled using administrative data.

The 1982 benchmark estimates were also based on the 1982 survey. Estimates of outputs for the unsurveyed years between 1971 and 1982 were based on interpolation between the 1971 Census and the survey, adjusting in areas where there were weaknesses in the data. Estimates of inputs and GDP items were projected from the 1971 benchmark

estimates, based on administrative data and on a sample of the operating expenses structure of selected establishments from the corporate sector and the results of operating expenses structure of selected kinds-of-business mentioned elsewhere. Administrative data were used to calculate GDP aggregates.

The basic data source since 1982 has been the annual survey of retail establishments encompassing the annual survey of retail chain and department stores.

The Industry Division compiles annual retail trade estimates from various sources, including the following surveys:

- (i) The annual Retail Trade Survey – mailed to independents and multi-location firms with sales of \$1 million or more;
- (ii) The annual Retail Chain and Department Stores Survey – no revenue cut-off;
- (iii) The annual Wholesale Trade Survey – retail locations reported by wholesale firms, – no revenue cut-off.

Non-survey sources include:

- (i) T-1 tax files for unincorporated firms with annual sales between \$10,000 and \$1 million.
- (ii) T-2 tax file data for incorporated firms with annual sales between \$10,000 and \$1 million.
- (iii) Data on unincorporated and incorporated firms operating in 1986 with sales over \$1 million that could not be added to the survey mailing list.

Surveys, including the annual mail-out survey and the annual Retail Chain and Department Stores Survey represent 75% of the retail data estimates, and other sources represent 25%. Existing survey data and administrative records supplement the mail-out survey and reduce the response burden on businesses.

Records obtained from survey and non-survey sources require processing to produce the required data files by SIC and by province. These become the basis for estimates of retail trade output.

In general, estimating procedures for retail trade are similar to those described for wholesale trade in Chapter 3. To avoid repetition, the following discussion highlights only the differences.

#### (1) Output

##### Gross margins

The previous section outlined different sources of data used to estimate sales. The sales of retail trade are available by kind-of-business, as is the case with wholesale trade and can be aggregated to the SIC level. Movements in sales by SIC are compared to movements in

total revenues reported in the Industrial Organization and Finance Division's data and with the monthly sales in the New Retail Trade Survey (NRTS)<sup>10</sup> series. The NRTS is a monthly, location-based sample survey with 28 aggregations of kind-of-business; hence the annual Retail Trade (ART) estimates must be similarly grouped to make comparisons. Where necessary, adjustments are made to accommodate undercover/ misreporting by SIC. After total sales have been estimated, they are split between the corporate and unincorporated segments to allow separate estimates of gross margins, operating surplus and net income.

The survey tabulates margins by SIC for different portions of the survey (e.g., chain stores, the surveyed portion, tax files, etc.) which are aggregated into a total margin; an average margin ratio to sales is then obtained for each SIC. These ratios are applied to the sales of each SIC to obtain gross margins for the corporate and unincorporated segments. Sets of operating ratios of margins and operating expenses from occasional surveys<sup>11</sup> conducted for specific store types (e.g., drug stores, hardware stores, florists' stores, etc.) are incorporated into the estimates where possible.

### Liquor margins

In the case of liquor stores, the gross margins reported in the ARTS include profits made by liquor commissions on alcoholic beverages. These profits are treated as indirect taxes and are, therefore, removed from gross estimates of margins. Estimates of operating expenses for liquor commissions are based on details presented in an annual publication.<sup>12</sup> This source also provides a breakdown of sales by commodity (e.g., liquor, beer and wines) used to distribute the margins.

Brewers' Retail outlets also handle beer sales. Margins associated with beer sales are not directly available from the survey. They are estimated as a proportion of sales based on IOFD data. A methodology has been developed and used to estimate margins on beer (and wine) sold by grocery stores.

### The non-store type margins of retail trade

In addition to retail store-type establishments included in the ARTS, margin estimates are made for non-traditional retail establishments, — vending machines,<sup>13</sup> campus book stores,<sup>14</sup> direct sellers,<sup>15</sup> etc. Where applicable, fiscal year data are adjusted to the calendar year. Retail establishments earn additional government revenues for collecting sales taxes, for selling lottery tickets and for operating post offices on

their premises. Output values for these activities are estimated and added to the margin as additional output of retail trade. In the output structure, output is estimated for news carriers (for home delivery of newspapers).

### Non-trade activities

As with wholesale trade, these receipts are estimated by SIC. Since the ARTS collects data on non-trade activities for the surveyed portion only, total estimates have to be made using the 1974 commodity structure of sales.<sup>16</sup> Major components include: receipts from repairs (especially of automobiles); rental of automobiles, machinery and equipment; data processing; preparation and sale of meals, etc. Receipts from smaller activities (e.g., storage, transportation, etc.) are estimated. All these components are estimated by SIC and are then removed from gross margins to obtain an estimate of trading margins (net margin) — i.e., the portion that is distributed to intermediate and final use and across commodities.

<sup>10</sup> Statistics Canada, *Retail Trade, Monthly*, Catalogue No. 63-005 (Ottawa).

<sup>11</sup> Statistics Canada, *Operating Results, Men's Clothing Stores*, 1974 and 1979, 1981 and 1983, Catalogue No. 63-603 (Ottawa, 1977, 1982, 1983 and 1986).

Statistics Canada, *Operating Results, Women's Clothing Stores*, 1975, Catalogue No. 63-604 (Ottawa, 1978).

Statistics Canada, *Operating Results, Independent Retail Hardware Stores*, 1976, Catalogue No. 63-605 (Ottawa, 1979).

Statistics Canada, *Operating Results, Retail Shoe Stores*, 1977, Catalogue No. 63-606 (Ottawa, 1979).

Statistics Canada, *Operating Results, Retail Drug Stores*, 1978, 1981 and 1983, Catalogue No. 63-607 (Ottawa, 1980, 1983 and 1987).

Statistics Canada, *Operating Results, Retail Florists*, 1979, 1981 and 1983, Catalogue No. 63-608 (Ottawa, 1982, 1984 and 1986).

Statistics Canada, *Operating Results, Independent Retail Jewellery Stores*, 1978, 1981 and 1983, Catalogue No. 63-609 (Ottawa, 1981, 1984 and 1986).

Statistics Canada, *Operating Results, Retail Hardware Stores*, 1980, Catalogue No. 63-610 (Ottawa, 1982).

Statistics Canada, *Operating Results, Women's Retail Clothing Stores*, 1980, Catalogue No. 63-611 (Ottawa, 1982).

Statistics Canada, *Operating Results, Retail Family Clothing Stores*, 1980, Catalogue No. 63-612 (Ottawa, 1982).

<sup>12</sup> Statistics Canada, *The Control and Sale of Alcoholic Beverages in Canada*, Annual, Catalogue No. 63-202 (Ottawa).

<sup>13</sup> Statistics Canada, *Vending Machine Operators*, Annual, Catalogue No. 63-213 (Ottawa).

<sup>14</sup> Statistics Canada, *Campus Book Stores*, Annual, Catalogue No. 63-219 (Ottawa).

<sup>15</sup> Statistics Canada, *Direct Selling in Canada*, Annual, Catalogue No. 63-218 (Ottawa).

<sup>16</sup> Statistics Canada, *Retail Commodity Survey*, 1974, Catalogue No. 63-526 (Ottawa, 1976).

The output structure of the industry includes goods produced by manufacturing activities (e.g., bakery products produced in small bakeries and re-upholstering done by establishments whose predominant activity is retailing). These establishments were classified to manufacturing in the 1970 Standard Industrial Classification of industries. In 1981, they were transferred to retail trade. The associated input structure of these establishments is based on the 1981 structure of the manufacturing sector, of which they were part until 1981. Outputs associated with slaughtering cattle and custom clothing manufacturing are also shown. In addition to adding back the service receipts mentioned above, an estimate of real estate rent is added, to arrive at the total output of the retail trade industry.

As mentioned earlier, adjustments made to the gross margin above are distributed by SIC to arrive at net retailing margins by SIC. Part of this total is assigned to direct intermediate and final demand use. For example, the personal sector is assumed to buy retail margin for used cars, the earnings of retail stores from operating postal services are inputs into the postal industry, and the sums paid by lotteries to retail establishments for selling lottery tickets are treated as inputs of retailing margin by that service industry. Residual output not directly allocated is distributed over the commodities in a very similar way to that used for wholesale margins.

## (2) Estimating GDP

The Survey of Retail Trade does not collect information on GDP components except for salaries and wages and employee benefits. The 1971 Census<sup>17</sup> provided data on operating expenses together with net profit ratios by kind-of-business. For subsequent years, considerable use is made of corporate tax data to obtain surplus ratios, net operating expenses ratios, GDP by SIC, expense breakdown by type of operating expenses, etc. These components are estimated year by year. The company/ establishment mix inherent in these IOFD data does not provide data on a pure establishment basis. The data are useful as projectors/estimates once the company/establishment relationship has been established for the benchmark year.

To estimate the GDP, the first step is to determine salaries and wages and SLI. The totals supplied by the Labour Division (from T-4 data) are used, with some adjustments specific to the industries. SLI data are obtained from the Labour Division and adjusted similarly.

To estimate the operating surplus and net income components of the GDP, total net sales of the retail trade industry are split between the corporate and the unincorporated segments. This split has been available from the detailed tabulations in the retail survey data files. It must

be pointed out that the level of sales for the unincorporated sector is much higher than the gross business income reported in the Revenue Canada publication on individual tax returns.<sup>18</sup>

The operating surplus for 1971 was calculated from the Census data by SIC. The results were reviewed in the context of ratios of operating surplus to total revenues based on corporate tax data. Adjustments were made where necessary. Through this process, a relationship between the ratios generated from the establishment data and those obtained from the company data was established. Since 1971, operating surplus has generally been estimated based on the movement of the ratios of surplus to revenue from the tax data. They are used to project from the 1971 benchmark value of surplus. Adjustments are made to counter problems arising from misreporting.

These procedures are applied to the sales by SIC of the corporate segment to estimate the operating surplus of the corporate segment. For the unincorporated sector, the surplus is estimated by estimating depreciation and the interest portion of the operating expenses by SIC.

The data sources and methods used to estimate operating surplus for retail trade are therefore the same as those for wholesale. However, data for many large companies, especially department stores, are based on different fiscal years and must be adjusted to the calendar year. Estimates of surplus generated by the corporate segment are then supplemented with estimates for the unincorporated segment and non-store establishments, such as vending machines, direct sellers, campus book stores, etc. Estimates for bad debt adjustment, for removal of depreciation of leased assets and Inventory Valuation Adjustment (IVA) are obtained from the National Accounts and Environment Division. Salaries and wages are based on T-4 data. The estimates of salaries and wages and SLI, operating surplus, and net income comprise the GDP at factor cost for the industry, and account for 66.5% of the Input- Output value of output of retail trade in 1986. Salaries and wages and SLI constituted 73.2% of the GDP for retail trade in 1986.

To estimate net income, the net/gross income ratios from the 1971 Census are extrapolated using the ratio of net/gross business income from tax data; this eliminates undercoverage. Estimates are added to cover receipts of news carriers and commissions earned by retail establishments for collecting sales tax, selling lottery tickets and operating post

<sup>17</sup> See footnote 3, p. 32.

<sup>18</sup> Revenue Canada Taxation Statistics, 1988 Edition, Analyzing the returns of individuals for the 1986 taxation year, and miscellaneous statistics, (Ottawa, 1988).

offices. Estimates of capital expenses charged to current account and personal bad debts are also added. Since most small bakeries and re-upholstering establishments are classified as unincorporated, an estimate of their net income is also added.

### (3) Estimating the input structure of retail trade

After estimating the GDP of RT, the next step is to allocate intermediate inputs. As discussed before, the inputs of retail trade relating to subsidiary activity are estimated separately. To these are added estimates of inputs generated from the retailing activity of the establishments. The retail trade survey does not collect any information on the operating expenses of retail establishments. These data were tabulated by establishment from the 1971 Census data files and were used as the basis for the input structure of the retail trade industry from 1971 onwards. Patterns of expenses for 1971 were obtained separately for the corporate and the unincorporated segments. Once this had been done, the expense patterns were applied to sales by kind-of-business and/or projected forward with price indices, to generate an estimate of total operating expenses in the post-1971 period. Some of the expense categories had to be further disaggregated using information from other sources. Use was made of operating expense data obtained from a sample of administrative records selected to supplement the data. The data on operating expenses from the above source, and their movement over time, are used to estimate the input structure for years other than 1971. Estimates of subsidies are based on an analysis of public accounts information. Estimates of repair construction, government goods and services, royalties, franchises, imputed bank charges, etc. are available by industry from other sources in the Input-Output Division.

### (4) Estimating commodity sales and margins

The commodity distribution of sales provided by the 1974 Retail Commodity Survey (RCS) is the main instrument for establishing the pattern vector of sales by SIC. Since the kind-of-business (KOB) detail in the 1974 RCS does not match Statistics Canada's Survey Division's KOBs, sales

from the Retail Commodity Survey were aggregated to SIC. Commodities were also aggregated, into 94 groups (including services).

The 1986 sales by SIC were broken down into commodity groups based on the above distribution of sales. Since the commodity structure also includes 11 groupings for services, these are used to estimate services by SIC. The other 83 commodity groups are used to estimate margins for commodities. To each of these groups, an appropriate KOB-type margin ratio from the 1971 Census is applied, generating estimates of margins for 20 SICs. The margin totals by SIC come close to the control totals of margins by SIC. Differences are prorated back to control totals by SIC, providing the first estimate of margins by commodity. The results are compared to supply<sup>19</sup> aggregates and, if necessary, adjustments are made.

Each commodity group contains a number of input-output commodities on which the margins have to be spread. This is done using a weighting pattern based on the supply of input-output commodities within each group. The total intermediate and final demand uses are at a preliminary stage of estimation. The next step is to add retailing margins produced from non-trade establishments, particularly the GPRS margins from service industries. These margins are added by input-output commodity to produce a total for each commodity. The estimation of trade margins is preliminary and has to be tested against the other variables in the commodity balancing process; however, it provides the first approximation of the retail trade margin by commodity.

Because most retail store sales are made to the personal sector, the largest proportion of the margins is routed to personal expenditure categories. However, some margins are allocated to intermediate use in the agricultural sector, to fictive industries such as operating supplies and cafeteria supplies, and to users who would buy through retail channels. "Class of customer" information available in the ARTS is used where possible to establish the allocation between intermediate use and final demand.

<sup>19</sup> Production plus imports less exports (these are not available for domestic use) plus inventory change.

## Chapter 5

### Finance, Insurance, Real Estate Operators and Insurance Agents Industries

This chapter deals with sources and methods for estimating inputs and outputs of finance, insurance, real estate operators and insurance agents industries, which are made up of the following Input-Output industries:

- 1) Banks and other deposit-accepting institutions
- 2) Trust/deposit-accepting mortgage companies
- 3) Credit unions
- 4) Other finance and real estate industries
- 5) Insurance industries
- 6) Government royalties on natural resources
- 7) Owner-occupied dwellings.

### Concept of Production

#### a) Banks

The gross output of a non-financial industry is defined as the "value in the market of all the goods and services (commodities) produced during a period of account, including work-in-progress and product for use on own-account".<sup>1</sup> The output thus defined, less intermediate inputs and net indirect taxes, equals gross domestic product (GDP) at factor cost. GDP at factor cost, less labour income, equals other operating surplus. From this surplus interest and dividends are paid. Since interest and dividends *paid* are treated as a distribution of surplus, interest and dividends *received* are treated as a transfer and not included as part of the operating revenue of the business.

Financial intermediaries like banks differ from non-financial business in that their income from interest is sizable compared with income from sales of service. Applying the above method (exclusion of interest income from the revenue of banks) will lead to a low or even negative GDP. Therefore, "the main exception to the normal method of measuring production occurs in the banks and near-banks. The reliance of financial institutions on interest rate differentials for their profitability, that is, charging higher interest rates on funds lent than they pay on borrowed funds, results in small or negative production when standard national accounting methodology is followed. Rather than treating interest receipts as part of operating revenue they are netted against interest payments on the expense side of the account. This treatment generally results in a substantial negative interest flow which ultimately lowers the measure of income or product originating in the financial intermediaries.

A significant part of the excess of interest receipts over payments may be viewed, however, as revenues received for services rendered by financial intermediaries but for which they make no specific charge. If this assumption is made and the differential is treated as imputed revenue, the negative impact on the expense side of the account is removed and the measure of income and product originating in the industry is raised. The rationalization for this treatment is that interest paid to depositors is less than pure interest rates would dictate and should be raised, and that interest received from borrowers is higher than pure interest would dictate and should be lowered.

<sup>1</sup> United Nations: *A System of National Accounts*, New York 1968, P. 234.

Text Table 7

Banking Imputation with Hypothetical Data

	As reported by the Banking Industry	Conventional treatment of non-financial industry	Banking Industry after imputed Output
<b>Revenue</b>			
Interest received	85	-	-
Service charges, etc.	20	20	20
Imputed service	-	-	45*
<b>Total revenue</b>	<b>105</b>	<b>20</b>	<b>65</b>
<b>Expenses</b>			
Interest paid to depositors	40	40	-
Materials & services	25	25	25
Salaries and wages and supplementary labour income	35	35	35
Profit	5	-80	5
* (Interest received 85 Interest paid -40 )			
	45		

The net result of these adjustments is considered to be equivalent to the uncharged-for service output of the institution for which an imputation is required".<sup>2</sup>

Text Table 7 illustrates the treatment of banking imputation with hypothetical data. Column 1 shows the revenue and expenses and profit as reported by the banking industry.

Column 2 shows that when the conventional method is applied to banks the resulting GDP turns out to be negative. Column 3 shows the case where an imputed interest has been calculated. The Input-Output production is 65; imputed interest of (85-40=45) and other revenue (20). Subtracting the intermediate expenses from the output yield a positive profit of 5 and GDP of 40.

The imputed service thus calculated is allocated to persons, to governments and to business sector industries. Compared to an initial GDP calculation before imputations, the adjustment does two things: 1) it increases the total GDP of the economy to the extent that imputed service charges are allocated to the final demand sector; 2) it shifts GDP from other industries to banks to the extent that imputed service charges are allocated as intermediate inputs to those industries.

## b) Owner-occupied dwellings

Another imputation of a different type is made for owner-occupied dwellings. Homeowners are considered to benefit from the services of their dwelling in much the same way as a landlord would. An imputed rent for owner-occupied dwellings is calculated and included as output. This imputation helps to keep output of rent invariant to changes in the preference for rented or owned accommodation.

## c) Insurance

This industry includes life insurance, property and casualty, including marine insurance companies. While life insurance carriers set aside and accumulate substantial reserves against fulfillment of their contracts which normally span several years, the fire, casualty and marine insurance carriers issue term insurance against possible losses during a relatively short period. This distinction underlies the difference in treatment of the two groups of insurance carriers.

### (i) Life insurance companies

The premiums received by a life insurance company include a payment for insurance service and a saving element. Life insurance companies transfer excess premium and property income over payments to policy holders and other expenditures to their reserve funds. This fund represents the saving portion of life insurance policies. It is considered to be held in the personal sector by a private "association" of individual policy holders. Interest and dividends

earned through investment of those funds are therefore deemed to be interest and dividends received by persons.

The value of the output of life insurance carriers is measured in terms of expenses relating to life insurance activity proper, which is the sum of intermediate expenses, compensation to employees, depreciation and dividends paid to shareholders.

### (ii) Property and casualty insurance companies

Property and casualty insurance companies offer term insurance against specified risks in return for stated premium payments. These premium payments consist of a charge for the service of insuring and a charge for the risk of insuring. The value of output of the casualty including marine insurance is therefore defined to be equal to the insurance premiums earned, less insurance claims paid on such policies during the year. This assumes that insurance premiums represent payment for casualty insurance service plus risk and value of claims paid represents the measure of risk element. It is possible that claims may be less or more than the expected (i.e. normal) claims that are reflected in the premium set by the insurance companies. Further claims for the period of account may be outstanding. The result is that the computed service charge may contain an element of capital gain or loss, and of a financial claim of a policy holder of a casualty insurance company. Because of the difficulty in estimating the above elements, we have accepted the present national accounting practice of defining the output of insurance companies as equal to the difference between premiums earned and claims paid during a year.

## Overview

A variety of data sources are used to estimate these industries. Principal sources include: the *Consolidated Return of Revenue, Expenses and Changes in Capital and Reserves*, produced by the Office of the Superintendent of Financial Institutions (OSFI), formerly the Office of the Inspector General of Banks; and *Financial Institutions: Financial Statistics*<sup>3</sup> for estimates relating to banks, credit unions and other deposit institutions; *Corporation Financial Statistics*<sup>4</sup> for the corporate part of trust, other finance and real estate; tabulations of income tax returns provided by Revenue Canada for unincorporated business; and reports from the Department of Insurance.

<sup>2</sup> Statistics Canada, *A User Guide to the Canadian System of National Accounts*, Catalogue 13-589E, P. 27.

<sup>3</sup> Statistics Canada, *Financial Institutions: Financial Statistics, Quarterly*, Catalogue No. 61-006 (Ottawa).

<sup>4</sup> Statistics Canada, *Corporate Financial Statistics, Annual*, Catalogue No. 61-207 (Ottawa).

The data from the Superintendent of Financial Institutions present two problems for Input-Output accounting concepts: 1) they are consolidated in that they include subsidiaries which are assigned to different finance industries; 2) they include some "out of Canada" activity which must be excluded to obtain only domestic operation data.

The *Corporation Financial Statistics* data are compiled from T-2 income tax returns. The industrial classification used for the finance and real estate sectors by *Corporation Financial Statistics* does not correspond to the SIC (Text Table 9). Also, the statistical unit for these data is the corporation, not the establishment. As the chance of financial corporations crossing industry boundaries into non-financial industries is small, this problem is probably not significant at the level of highly aggregated trust, other finance and real estate industry. The Input-Output Division's ability to produce estimates at a finer level of industrial detail is, however, limited by both the system of classification and the corporation-based data. A second significant problem is lack of detail in the catchall categories of other expenses and other revenue in the corporate data. Generally, large control totals of expenses must be disaggregated using expense patterns derived from other sources, and through direct access to samples of corporate data. Further, corporate profit

defined for income tax purposes is quite different from the national accounting concept of profit; thus revenues and expenses each must be adjusted to conform to national accounting concepts.

In the case of life insurance, the general expenses data supplied include "out of Canada" expenses that must be eliminated. In addition, there are no details of revenues and expenses for provincially-registered life and property and casualty companies. Estimates are made based on data for federally-registered companies.

A percentage of the estimated portion of the data is given in Text Table 8 for output, intermediate inputs, net indirect taxes and Gross Domestic Product (GDP). This estimated percentage represents data which are not directly obtained from annual survey and/or administrative tax data. Estimates are based upon periodic and partial information. Examples are:

- 1) Upward adjustments to production, intermediate expenses and GDP for undercoverage.
- 2) Estimation of intermediate expense detail from partial information.

Text Table 8

**Finance, Insurance, Real Estate Operators and Insurance Agent Industries, 1986 Estimates in millions of dollars, with percentage estimated for each component**

Industry	Output	Intermed. Inputs	Net Indirect Taxes	GDP at Factor Cost	GDP Share %
Millions \$					
Banks, credit unions and other deposit accepting	11,551	2,937	411	8,203	12
% estimated	2%	10%	0%	1%	
Trust, other finance and real estate	44,874	16,800	3,043	25,032	36
% estimated	9%	87%	20%	9%	
Insurance	8,577	4,560	1,081	2,937	4
% estimated	5%	19%	3%	13%	
Government royalties on natural resources	3,849			3,849	6
% estimated	0%			0%	
Owner-occupied dwellings	37,692	2,776	5,902	29,013	42
% estimated	0%	7%	0%	1%	
<b>Total</b>	<b>106,544</b>	<b>27,072</b>	<b>10,438</b>	<b>69,034</b>	<b>100</b>
<b>% estimated</b>	<b>4%</b>	<b>59%</b>	<b>6%</b>	<b>4%</b>	

Note: Totals may not add due to rounding.

## Sources and methods

### 1) Banks and other deposit-accepting institutions

This industry covers the Bank of Canada, chartered banks and other banking-type institutions.

#### a) Bank of Canada

The Bank of Canada derives large interest mainly from its return on holdings of Government of Canada bonds and treasury bills. This interest earned is treated as a transfer from Government to the Bank which is then transferred back to the Government when the bank transfers its profit to the treasury. The output of the Bank of Canada is therefore equated to its operating expense.

The basic data are obtained from the annual report of the Bank of Canada. The Bank's annual statement of revenue and expense contains a detailed breakdown of expenses consistent with Input-Output commodities.

Wages and salaries and SLI data are obtained from the expense statement. Depreciation on buildings and equipment comprises the only component of operating surplus for Input-Output accounts.

#### b) Chartered banks

The basic source of information for banks is the annual *Consolidated Return of Revenue, Expenses and Changes in Capital and Reserves*, produced by the OSFI. This statement covers both Schedule A and Schedule B banks, which account for almost all of the industry.

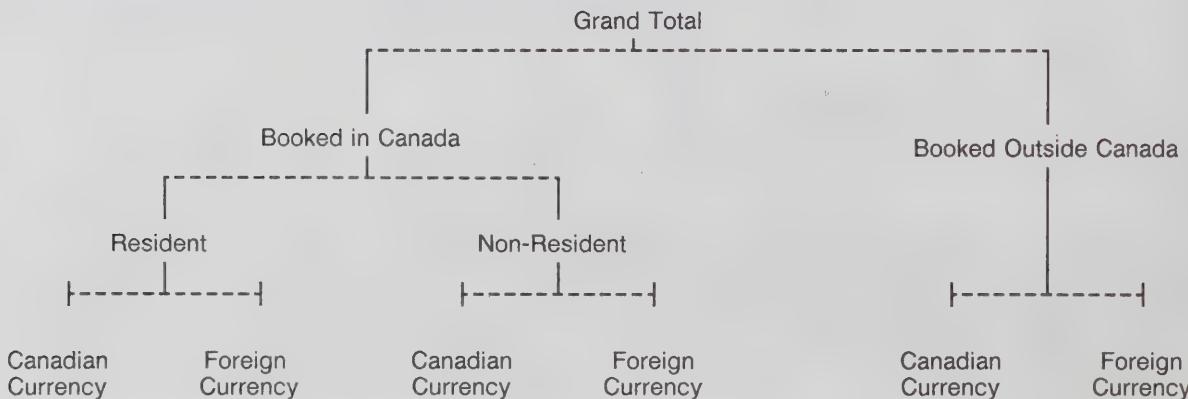
The output is calculated as the sum of imputed service charges, receipts for services including commissions (actual service charges), and other revenue such as rent. Imputed interest<sup>5</sup> is calculated by deducting interest expense from interest and dividend income.

Two major problems are encountered in the calculation of banking output: 1) the data are consolidated; and 2) the data for schedule A banks represent "global" operations, where output calculations for the industry require domestic operation data. The first problem results in major subsidiaries being included in the data. These subsidiaries (primarily mortgage loan companies, but also other financial institutions) are included in the *Corporation Financial Statistics* data, which are used for estimates of the trust, other finance and real estate industry. Until 1982, the OSFI supplied a non-consolidated revenue and expense statement; the 1980 Bank Act now requires consolidated reports from banks.

When two related companies consolidate their income statement, it is a normal procedure to "net" revenue and expenses. For example, if the rental expense of a subsidiary is income for the parent company, then the rent would be deducted from the revenue of the parent company and from the expense of the subsidiary in the consolidated statement. In this example, we would add back rental expenses paid by the subsidiaries to be included as bank rental revenue.

Subsidiaries are identified and their revenues and expenses are tabulated. Some information for 1982 is available from the Department of Insurance on the amount of expenses that the mortgage loan subsidiaries of banks paid to banks. Using this information, the subsidiaries are deducted from the OSFI's consolidated statement to yield estimates of deconsolidated revenues and expenses for all chartered banks.

<sup>5</sup> The value of imputed services provided to non-residents is removed from the output; thus no allocation is required for this sector. A further adjustment is made for the imputed portion related to government borrowings. As these borrowings are assumed to be made for "non-productive" purposes, the value of the imputed intermediation services is set at zero with a corresponding reduction in the output of the banking sub-sector. This reduced output is allocated to all sectors (business, persons and government) using such services.



The second problem relates to global versus domestic operations. Data from the Superintendent of Financial Institutions have always been on a global basis and since 1982, the interest revenue and expense data for Schedule A banks have been subdivided as follows:

The non-interest revenue and expense items are divided into "Booked in Canada" and "Booked outside Canada." Discussions with the staff of OSFI have established that all data categorized as "Booked outside Canada" are outside the bounds of domestic product. Furthermore, the split of "Booked in Canada" into "Resident" and "Non-Resident" is not meaningful in the national accounting sense of domestic product. The domestic portion of imputed interest is calculated by multiplying total "Booked in Canada" imputed interest by a domestic to total ratio. This ratio is calculated as the ratio of resident holdings of "Booked in Canada" deposit liabilities of the banks to total "Booked in Canada" deposit liabilities.

The problem of consolidated data for intermediate inputs is the same as for the output and is dealt with the same way. The problem of domestic versus foreign activity does not arise. However, there are problems with disaggregating some reported items of expense such as office machines and equipment, office furniture, and other general expenses. These items are analyzed for content, and estimates are made for the required commodities using time series and other relevant information.

The same basic data source is used for GDP components. An estimate based on information supplied by the Canadian Bankers Association for bank employees involved in janitorial work is added to the deconsolidated salaries and wages estimate from the OSFI's report. The OSFI report includes these salaries and wages as maintenance and repair expense. Operating surplus is derived residually as output less expense.

### c) Other banking-type institutions

Included here are the Montreal City and District Savings Banks<sup>6</sup>, the Ontario Savings Office and the Alberta Treasury Branches Deposit Fund.

The data for each of these institutions are obtained from financial statements in their annual reports. Output consists of an imputed interest calculation plus other revenues. Because of a disaggregation problem with certain reported items, such as other expenses, estimates are made using related data for similar institutions.

### d) Allocation of outputs

The imputed interest is allocated to persons, business, and government based on their share of deposits with the banks and on their borrowings (except government borrowings) from them. The business share of imputed interest for depositors is then apportioned among Input-Output industries using the SIC distribution of bank deposits from *Corporation Financial Statistics*. The business share of imputed interest for borrowers is distributed over major SIC sectors using Bank of Canada data on bank loan interest and then further disaggregated to I.O. industries using the SIC distribution of bank loan holdings from *Corporation Financial Statistics*. The sum of the business portion of imputed interest for borrowers and depositors represents the I.O. commodity imputed interest-banks.

Estimates of other financial charges are also distributed over persons, business and government sectors. An estimate of bond commissions, using Public Finance expenditure detail, is allocated to the federal government. Commissions paid by other levels of government are based on an analysis of public accounts. Credit card charges, available from the OSFI, are distributed to the relevant business sector Input-Output industries. The remainder of the other financial charges is distributed over all business sector Input-Output industries based on bank loans data from the *Corporation Financial Statistics*.

## 2) Trust/deposit-accepting mortgage companies

This industry includes trust companies and mortgage loan companies. Basic data for outputs are obtained from *Corporation Financial Statistics*, and from the National Accounts and Environment Division. Output includes commissions, sales of services, imputed trust & mortgage interest, administration cost of consumer loans and other rent. The mechanics and logic of the imputed interest calculation for trust and mortgage loan companies are much the same as for banks. However, for these companies, the imputation is made only for the personal sector, based on their shares of deposits and borrowings; no imputation and allocation is made to the government or business sector. It is assumed that the government sector does not use such services. Since no imputation is made for the business sector, GDP for trust and mortgage companies is understated and there is a corresponding overstatement in GDP for the rest of the business sector; however, GDP for the entire business sector does not change.

<sup>6</sup> The Montreal City and District Savings Bank became the Laurentian Bank of Canada in August 1987.

The control total of expenditures on intermediate inputs is obtained from *Corporation Financial Statistics*. Expense detail is not sufficient for Input-Output purposes, particularly for "other expense" data. More details for federally-registered companies only are available from the OSFI. This detail is used to estimate the content of the "other expense" category.

Salaries and wages data are obtained from the Labour Division. SLI and operating surplus are calculated from *Corporation Financial Statistics* data.

The *Corporation Financial Statistics* data for this industry are adjusted to exclude government mortgage enterprises which are transferred to the other finance and real estate industry.

Total output of imputed interest and administration costs of consumer credit are allocated to the personal sector. The real estate commissions produced by this industry, and those of the other finance and real estate industry, are allocated to construction capital formation in final demand. Part of the reported "other commissions" is allocated to the federal government based on Public Finance data. The remaining other commissions and sales of service revenues are apportioned to business sector Input-Output industries using the SIC distribution of assets data given in *Corporation Financial Statistics*.

### 3) Credit unions

The basic data source for credit unions is *Financial Institutions*<sup>7</sup>, which includes detailed

estimates of revenue and expense for both local and central credit unions.

The output of credit unions is equal to imputed service charges, plus explicit service charges, and other operating revenue. In the calculation of imputed interest, credit unions are treated differently from chartered banks. Credit unions are membership organizations, and any operating profits are generally distributed among membership as bonus interest on deposits, rebates on loan interest, or some form of dividend. Therefore for national accounting purposes, operating profits are treated as interest paid to depositors. The total of imputed service charges is lower than it otherwise would be by the amount of the operating profit. Total output thus equals operating expenses.

Detailed expense data, including salaries and wages and supplementary labour income, are included in *Financial Institutions*. The operating surplus is defined to include only depreciation: operating profit is considered to be interest paid.

### 4) Other finance and real estate

This industry is discussed in two parts: corporate and unincorporated. Industries included in the corporate segment are listed in Text Table 9. The main source of data for this segment is *Corporation Financial Statistics*. The unincorporated segment consists of unincorporated finance and real estate, rents, royalties and trustee pension funds.

<sup>7</sup> See footnote 3, p. 38.

**Text Table 9**  
**Corporation Financial Statistics Industries**

Industry	Industry Code	Input-Output Detail
Export finance	721	
Sales finance	723	
Consumer loan companies	725	Credit agencies
Business financing companies	727	
Security dealers and brokers	741	Security dealers
Mutual funds	751	
Holding and holding management companies	756	Investment companies and other financial agencies
Government investment funds	763	
Other financial agencies	769	
Insurance and real estate agencies	781	Insurance and real estate agencies
Real estate operators and lessors	791	Real estate operators and lessors
Real estate developers	793	Real estate developers

The procedure for industries covered by the *Corporation Financial Statistics* data has been relatively standardized. In general, the output is sales of products (goods) less cost of sales, sales of services, rental income, commissions, royalty income and other operating income. Intermediate expenses include repairs and maintenance, real estate rent, taxes other than direct taxes, royalty expense, rent other than real estate, and other deductions (adjusted as necessary). Operating surplus is calculated as output less intermediate expenses, salaries and wages, and employee benefits. Details for some expense items must be supplemented, mainly through samples of T-2 returns. Important exceptions to this general procedure are discussed below, industry by industry.

#### a) Credit agencies

Two more items are included in the output, and the GDP, of this industry. These are the administrative cost of consumer credit and the depreciation of capital lease. The administrative cost of consumer credit (a part of total imputed service charges) is the administrative expense incurred by the financial institution in rendering services to borrowers in the personal sector. The depreciation of capital lease is an estimate of the amount of depreciation incurred on equipment rented under capital lease arrangements: "A capital lease is a lease that, from the point of view of the lessee, transfers substantially all the benefits and risks incident to ownership of property to the lessee."<sup>8</sup> Until 1979, data from *Corporation Financial Statistics* included an imputation for depreciation on both the revenue and expense sides of the income statement of lessor companies. On the revenue side the depreciation was added to "rent other than real estate." This practice has since been discontinued. Starting in 1980, the procedure recommended by the Canadian Institute of Chartered Accountants (CICA) has been used. Under this, assets leased by a company, under an agreement whereby the benefits and risks of ownership are transferred substantially to the lessee, are accounted for as a capital lease by the lessee and as a financial lease by the lessor. In other words, the lessee treats the leased equipment as an asset and the present value of lease payments as a liability. The lessee's income statement should show interest expense and depreciation rather than rental payments. The lessor treats the lease as a financial lease that shows on the balance sheet as a lease contract receivable. Rental income on the income statement includes that portion of the lease payment received over and above recovered costs. For tax purposes, however, the lessor reports total lease rental payments as income, and as an expense for capital cost allowance. Since 1979, *Corporation Financial Statistics* has adopted the recommendations of CICA. However, for national accounting purposes, the pre-1979 practice has been continued.

The total administration costs of consumer credit in the consumer loan finance output are allocated to the personal sector.<sup>9</sup> The remaining value of output consisting of commissions and sales of service is allocated to the business sector Input-Output industries using the SIC distribution of assets data from this source.

#### b) Security dealers

The main output of security dealers is stock and bond commissions. Because the buying and selling of securities is a central activity of this industry, security trading profit is considered part of output and GDP. An in-depth examination of "other revenue" data revealed that about 66% comes from operating revenue, 31% from recovery of expenses, and 3% from interest and the like. Because the last two items are not considered output, only 66% of other income is added to the output. The recovery of expenses is deducted from intermediate inputs.

The personal sector share of stock and bond commissions and mutual fund charges as calculated by the National Accounts and Environment Division is deducted from the total output of this industry and the residual is distributed among Input-Output industries in the business sector. This distribution is based on available expense detail for some industries and on the SIC distribution of marketable securities data from *Corporation Financial Statistics* for other industries.

#### c) Investment companies and other financial agencies

Sales of services such as mutual fund charges and stock and bond commissions, royalty income and real estate rent are the major output items reported by this industry. Sales of products less the cost of sales are not included because they represent the sales of establishments already included in other industries. Also, sales of services are adjusted for items that are not part of the output of this industry.

The personal sector share of mutual fund charges and government payments on stock and bond commissions are first calculated. The remaining value of output of commissions and sales of service are allocated to business sector industries using the SIC distribution of assets data from the same source.

<sup>8</sup> Canadian Institute of Chartered Accountants, Accounting Research Committee, Exposure Draft, Accounting for Leases Toronto, 1978.

<sup>9</sup> It is assumed that all lendings of household finance companies are to the household sector. An estimate of the value of their intermediation services is made with reference to their administrative costs (intermediate expenses, labour costs, and depreciation). Note that profits or net income are set at zero in the calculation of administrative cost. This underestimates the GDP of this subsector as well as that of the economy as a whole. GDP is lower by the amount of profit/net income on these services.

The value of imports of stock and bond commissions is allocated to the government sector and to business sector industries, using industry detail provided by the Balance of Payments Division.

Royalty income is allocated on the data from public accounts and distribution of royalties provided by the T-2 corporation financial statistics.

#### d) Real estate operators and lessors

The major output of this industry is real estate rent, residential and non-residential. It is assumed that all residential rent in the corporate segment is produced by this industry. The estimate of residential contract rent is reduced by an estimate of facility expense<sup>10</sup>. The intermediate inputs are also reduced by the same facility expense so the operating surplus remains unaffected. The facility expenses excluded here are routed directly to relevant categories of personal expenditure. For example, instead of showing a consumer buying electricity from a landlord who buys it from a utility, Input-Output accounts show the consumer purchasing the electricity directly.

#### e) Real estate developers

The output of this industry consists of real estate rent and commissions.

The major data problem is that revenues and expenses that belong to the construction industry are included and must be removed. The reported sales data include real estate commissions and sales of construction put in place. Because this split is not in the basic data, it is estimated. First, the real estate commissions produced by this industry are derived by subtracting from the control total of real estate commissions the amount produced by all other industries. This amount is subtracted from the reported sales of real estate developers to estimate construction revenue, which is then removed from the basic data for this industry. The intermediate inputs and the GDP are adjusted accordingly to exclude construction activity.

The output of real estate commissions, except for a small amount which is allocated to intermediate inputs of construction industry, is allocated to construction capital formation in final demand.

#### f) Finance and real estate (unincorporated)

The basic data for this industry are obtained from tabulations of income tax returns<sup>11</sup> from Revenue Canada. The data contain occupation codes and indicate type of business, such as insurance agents, real estate agents, real estate developers and subdividers, stock brokers and investment dealers, finance, mortgage and loan businesses, and other financial operations.<sup>12</sup>

Data on gross and net business income and capital consumption allowances are also available by occupation codes. When additional details are required, other sources such as tabulations of corporate income tax data are used for commodity content.

#### g) Farm non-residential paid rent

Gross rent derived from an Agriculture Division survey includes an estimate for both cash rents and share rents. Share rents are paid in kind instead of in cash. Net income is estimated using a rate of return calculated from the return on total farm operations. Two items of expense, property taxes and repair construction, are estimated by the Input-Output Division. The operating surplus is derived residually by subtracting intermediate expenses and net income from gross rent.

#### h) Farm residential paid rent

Gross rent for this category was survey-based until 1978; since then it has been projected. Space expenses include repairs, property taxes, mortgage interest, depreciation, and insurance. Net income is the difference between gross space rent and space expenses. Operating surplus is mortgage interest paid plus depreciation.

#### i) Non-farm residential paid rent

Most of the data for this industry and for owner-occupied dwellings come from the National Accounts and Environment Division. Appendix I describes the methodologies used to develop these estimates. Non-farm residential paid rent is discussed under owner-occupied dwellings.

#### j) Non-farm commercial paid rent

The gross output of this industry equals the gross rent paid by all industries, governments, universities, and non-profit institutions less rents received by government and corporate business. Rent received by corporate business is part of the output of other Input-Output industries: only rent produced by unincorporated business is included here. Net income and surplus are derived using ratios from data on residential rents. The intermediate expenses are broken down using a sample of expenses of corporate real estate operators.

<sup>10</sup> Residential rent is on a space rent concept. As such, consumers are supposed to buy direct the facility expenses. Facility expenses include depreciation of furniture and appliances, the cost of cable television, utilities, janitorial services, etc. See Statistics Canada. *National Income and Expenditure Accounts*, Volume 3, Catalogue No. 13-549 (Ottawa, 1975) P. 137.

<sup>11</sup> Revenue Canada Taxation, *Taxation Statistics, Annual*, (Ottawa), Table 13.

<sup>12</sup> Industry detail by two-digit SIC occupation code was derived from unpublished machine-readable files.

### k) Royalties received by persons

The gross output of this industry is the sum of oil royalties and other royalties received by persons. The estimates of oil royalties are obtained from the National Accounts and Environment Division. This value of royalties becomes part of the other finance industry surplus.

### l) Rent of appliances provided by the landlord

The National Accounts and Environment Division develops an estimate of rental income (equal to depreciation) from appliances provided by the landlord and included in contract rent. Since the output of residential rent is measured by the space rent concept, it is necessary to estimate an output called "appliance rent." This estimate is then divided into corporate and unincorporated parts. The corporate part is included as part of the output of real estate operators and lessors, while the unincorporated part is included here.

### m) Trusteed pension funds

The output of trusteed pension funds is equal to operating expenses of the fund. This information is obtained from *Trusteed Pension Plans*<sup>13</sup>. Estimates of wages and salaries are obtained from the Labour Division.

### n) Government mortgage enterprises

This industry includes Canada Mortgage and Housing Corporation, Farm Credit Corporation and Municipal Financing Corporation. The main data source is *Corporation Financial Statistics* supplemented with information from annual reports. Output, intermediate inputs and surplus are calculated in the usual way.

### o) Insurance and real estate agencies

Output of this industry is mostly agency commissions and fees, including some rents. Output, expenses and surplus are calculated in the usual way from *Corporation Financial Statistics*. The breakout of insurance commissions is from expense detail in the insurance industry. Real estate and other commissions income is assumed to be the remainder.

### p) Mortgage insurance fund

Output of this segment is insurance premiums and fees, less claims paid by the mortgage and insurance fund taken from the Canada Mortgage and Housing Corporation annual report. Expenses are broken out as fixed portions of the reported total. Surplus is output less total administration expenses.

## 5) Insurance industries

This industry includes life insurers, deposit insurers and property and casualty insurers.

### a) Life insurers including fraternal benefit societies

The value of output of life insurers is calculated as the sum of intermediate expenses, employee compensation, dividends paid to shareholders, and depreciation. To this is added an estimate of gross rental income to derive total output. The entire output of insurance is allocated to the personal sector.

For intermediate expenses, the primary data source is the Office of the Superintendent of Financial Institutions. To this is added an independent estimate for brokerage commission input, based on sales and purchases of stocks and bonds. Detailed expense data are specially tabulated for Canadian, British and other foreign companies. Three major adjustments are made. 1) The data for Canadian companies include both "in Canada" and "out of Canada" expenses. Although the National Accounts and Environment Division estimates total "in Canada" expenses, the commodity details must be estimated by the Input-Output Division using a special tabulation of a sample supplied by the Superintendent of Financial Institutions; 2) the expense data cover the accident and sickness branches of life insurers. The expenses for these branches are deducted and added to property and casualty insurance; 3) detailed data for provincially registered companies are not supplied by the Superintendent of Financial Institutions, which publishes only at an aggregate level. To derive the required commodity content, the expense pattern of federally registered companies is applied to provincially registered companies.

### b) Property and casualty insurers

Data used for output calculations are published by the Office of the Superintendent of Financial Institutions.

The output of property and casualty insurers is equal to insurance premiums earned, less claims paid, plus an estimate of gross rental income. The "out of Canada" portion of federally registered Canadian companies is excluded from the output. For provincially registered companies, only data on premiums paid are available. The estimate of premiums earned uses the ratio of premiums earned to premiums paid of federally registered companies. Claims data include adjustment expenses. For the output calculation, claims are first reduced by adjustment expenses, which are placed in the appropriate expense category on the input side of the industry.

<sup>13</sup> Statistics Canada, *Trusteed Pension Funds, Financial Statistics, Annual, Catalogue No. 74-201* (Ottawa).

Data sheets from the OSFI are used to estimate intermediate inputs. These sheets include detailed expense data for federally registered companies; for provincially registered companies, details are estimated using the pattern of federally registered companies. Accident and sickness insurers' expenses, which were deducted from the data on life insurers (see above), are added here. Total expenses for accident and sickness insurers are split between "in Canada" and "out of Canada", using the ratio of premiums paid in Canada to premiums paid out of Canada; only the "in Canada" portion is used for intermediate expenses. Surplus is calculated as output less expenses.

The estimates of personal expenditure on net insurance (premiums less claims) for auto insurance, theft insurance, and accident, sickness and personal property insurance are provided by the National Accounts and Environment Division. Insurance expenditures for the government sector and other final demand categories are based on the available expense detail. Export and import of insurance are obtained from the Balance of Payments Division. Output of the Canada Deposit Insurance Company is allocated to business sector finance industries. The above allocations are removed from total property and casualty gross premiums, claims, and net insurance cost to give premiums, claims, and net cost for the business sector only. The business portions of insurance expenditure are then spread over I.O. industries in proportion to the premiums paid. Net insurance and claims are assumed to move in proportion to gross premiums. To this net insurance cost by industry is added an estimate of hospital costs of workmen's compensation which is distributed to Input-Output industries using the industry distribution of workmen's compensation payments data available from the Labour Division.

#### **c) Government insurance**

This subdivision of the insurance industry includes the Export Development Corporation, the Canada Deposit Insurance Corporation, the Manitoba Public Insurance Corporation, the Saskatchewan Government Insurance Corporation and the Insurance Corporation of British Columbia.

The output, expense and GDP for each of these entities are compiled from data published in their annual reports. For additional commodity detail, estimates are made using related information.

#### **d) Prepaid medical expenses**

Data for this category are supplied by the National Accounts and Environment Division, and represent the output of private medical insurance plans. The output is equal to intermediate expense.

### **6) Government royalties on natural resources**

Government royalties on natural resources are treated as a special type of royalty and are assigned a code different from royalties received by persons. Information on government royalties is obtained from the National Accounts and Environment and Public Institutions Divisions. Most government royalties are from crown land in Alberta and Saskatchewan. The amount of royalties received by governments is output, which is equal to the operating surplus.

The allocation of royalties to the relevant I.O. industries is based on information from public accounts.

### **7) Owner-occupied dwellings**

Included in this industry are imputed rental values of farm and non-farm owner-occupied residential buildings, including garages.

The National Accounts and Environment Division is the source of information for this area (see Appendix I). Imputed farm rent is provided as a separate estimate. Total gross non-farm space rents are subdivided into paid dwellings and paid garages, and imputed dwellings and imputed garages. The imputed rent is the output of this industry, while paid rent is part of the other finance and real estate industry. Estimates are made for the combined total of non-farm paid and imputed rents for the following expenses: repairs, property taxes, insurance, mortgage interest, depreciation, and miscellaneous expenses. Net income is the difference between output and these expenses. A separate estimate for repairs and depreciation is made for paid and imputed rent. All other expenses are allocated among the sub-groups of paid and imputed rent in proportion to their output. The assumption is that the expense patterns for owner-occupied and tenant-occupied dwellings are the same. The miscellaneous expenses are further disaggregated using a sample of expenses from the Family Expenditure Survey.

Space expenses include repairs, property taxes, insurance, depreciation, mortgage interest, and miscellaneous expenses. For all expenses except repairs and miscellaneous, estimates are made for the combined total of paid and imputed space rent. Repair costs for owner-occupied dwellings (imputed rent) are estimated using Family Expenditure Survey data, which are interpolated or projected for non-survey years. To estimate repairs for paid rents, an expense ratio developed from administrative data is used. Mortgage interest is estimated based on data from *Financial Institutions: Financial Statistics*.

On the asset side of the balance sheets of financial corporations involved in mortgage lending is a list of mortgage loan assets classified as residential or non-residential. The ratio of residential mortgage loan assets to total mortgage loan assets is used to split mortgage interest income into interest received

from residential mortgages and interest received from non-residential mortgages. The interest received on residential mortgages is used as the mortgage interest expense for paid and imputed rents (other adjustments are also made). A depreciation estimate for housing stock is available from the Investment and Capital Stock Division. Insurance expense is based on data obtained from the OSFI. Data on premiums paid for property insurance are split into premiums on residential and non-residential property. The residential portion is further split into premiums on contents and premises. The premises portion is used as insurance expense for rents. Mortgage insurance is part of miscellaneous expenses. In the Input-Output accounts, insurance premiums paid are reduced by an estimate of insurance claims received. The insurance expense shown is a net figure. Property taxes data are obtained from the Public Institutions Division and are split into residential and non-residential components, using data provided by the provinces. Net rent is calculated as gross space rent less space expenses.

## Appendix

This appendix summarizes the procedures followed by the National Accounts and Environment Division to prepare rent estimates.

The estimates of non-farm gross paid space rent are the number of dwellings times the average rent per dwelling less the cost of landlord-supplied facility expenses. Data on dwellings are available by type of tenure (owner-occupied or tenant-occupied) and by type of dwelling (single, multiple, mobile, farm). Estimates of the average rents paid for tenant-occupied dwellings are based on Labour Force Survey data on rents paid by tenants living in unsubsidized dwellings. To estimate space rent, facility expenses are deducted from estimates of contract rent and transferred to the appropriate consumer expenditure category. These expenses include landlord supplied appliances, fuel, water, electricity and cable television, and separate estimates are made for each expense. Of course, average rent data cannot be collected for owner-occupied dwellings. Therefore, the average space rents for tenant-occupied dwellings are adjusted to reflect quality differences between tenant-occupied and owner-occupied dwellings. The average rent thus derived is multiplied by the number of owner-occupied dwellings to yield an estimate of imputed rent.



## Chapter 6

### Educational, Health and Social Service Industries

This chapter covers sources and methods for educational, health and social service industries, which include the following Input-Output industries:

- Educational service industry
- Private hospitals
- Homes for personal and nursing care
- Other health and social services.

Most activity in education and hospital services takes place in the non-business sector, and so the value-added in the business sector is relatively small.

#### Overview

The basic data on the operating revenue and expenses for the educational service industry are provided by the Education, Culture and Tourism Division. Family Expenditure Survey information on personal expenditure for commodities produced by the non-institutional sector such as music schools, dancing schools, etc. is also used as a data source. There is no direct information on the commodity content of intermediate inputs for this industry.

Private hospitals are identified by the Canadian Center for Health Information. However, no financial data are collected for this industry. Estimates of output and inputs must be developed using related information.

Data for homes for personal and nursing care are obtained from the Canadian Center for Health Information. Estimates for other health and social services are developed using diverse sources. There are few intermediate expense details in the available data.

Text Table 10 shows the relative importance of each industry and the percentage of the "estimated portion" of output, intermediate inputs, net indirect taxes, and GDP.

#### Sources and methods

##### Educational service industry

Included are all private educational institutions and self-employed educators operating outside the government school system. This includes private music and dance schools.

Output is determined for both institutional and non-institutional activities. Institutional activity includes private elementary and secondary schools, private community colleges, business colleges, trade schools and other schools, and institutions such as private museums and libraries. Basic data on the operating expenses and revenues of institutions are provided by the Education, Culture and Tourism Division. Non-institutional expenditures are derived from data on average family expenditures on private lessons and courses from the Family Expenditure Survey.<sup>1</sup>

A detailed commodity input structure is developed from a sample of each type of output provided by the Education, Culture and Tourism Division.

<sup>1</sup> Statistics Canada, *Urban Family Expenditure, 1976*. Catalogue No. 62-547 (Ottawa, 1979). Statistics Canada, *Family Expenditure in Canada, 1978, Volume III, All Canada: Urban and Rural*. Catalogue No. 62-551 (Ottawa, 1982). Statistics Canada, *Family Expenditure in Canada, 1982*. Catalogue No. 62-551 (Ottawa, 1984). Statistics Canada, *Family Expenditure in Canada, 1986*. Catalogue No. 62-555 (Ottawa, 1986).

**Text Table 10**

**Educational, Health and Social Service Industries, 1986 Estimates in millions of dollars with percentage estimated for each component**

	Output	Intermed. Inputs	Net Ind. Taxes	GDP at Factor Cost	GDP Share %
Millions \$					
Educational Service Industries % estimated	1,442 25%	512 23%	24 100%	905 5%	9
Private Hospitals % estimated	286 100%	98 100%	3 100%	186 40%	2
Other Health and Social Services % estimated	11,958 4%	2,768 100%	-17 44%	9,206 11%	89
Total % estimated	13,686 8%	3,378 88%	10 77%	10,297 11%	100

*Note: Totals may not add due to rounding.*

Wages and salaries and supplementary labour income (SLI) data are supplied by the Education, Culture and Tourism Division. Corporate business operating surplus and net income of unincorporated business<sup>2</sup> are calculated using taxation data<sup>3</sup>. Depreciation is estimated using data from the Investment and Capital Stock Division.

## Private hospitals

Proprietary (or private) hospitals are identified by the Canadian Center for Health Information<sup>4</sup> (formerly Health Division). The output of this industry is the total of the current operating expenditures (including depreciation). The annual survey of hospitals does not collect financial data concerning private hospitals but does collect data on patient days in private hospitals. Total expenditure and output data are therefore estimated using the public hospital data from the survey of public hospitals, and the patient days of private hospitals as follows:

- (1) Number of patient days in private hospitals multiplied by cost per patient day (from public hospital data).
- (2) The result from (1) is increased by an estimated factor to allow for the higher operating costs and profits of private hospitals.

Commodity detail of expenditures is based upon a sample of comparable public institutions. The estimates for the years following the sample are projected.

Data on wages and salaries are obtained from the Labour Division. The SLI values are estimated based on the ratio of SLI to wages and salaries of public hospitals. The operating surplus is an estimate based on CCA per hospital bed which is calculated by the National Accounts and Environment Division formerly the Income and Expenditure Accounts Division.

## Homes for personal and nursing care

Homes for personal and nursing care include establishments primarily engaged in providing personal care on a continuing basis with medical and professional supervision. The Canadian Center for Health Information survey of revenues and expenses of special care facilities, initiated in 1976, and the Labour Division's estimate of salaries and wages, are the basic data sources. Revenue and expense estimates are made for the non-surveyed portion of the industry and added to the Canadian Center for Health Information survey data.

The Canadian Center for Health Information provides samples and data with respect to staffed and operated beds, bed occupancy rates, and number of approved beds. The Canadian Center for Health Information sample pattern, also classified by type of care and type of ownership, by province, is inflated to calculate universe output control totals using these characteristics.

GDP is estimated using the same data. Salaries and wages data supplied by the Labour Division are derived from the Special Care Facilities Survey.

## Other health and social services

This component includes: establishments of physicians, surgeons and dentists, and other health practitioners in private practice; establishments primarily engaged in rendering diagnostic and therapeutic services not elsewhere specified; medical and other health laboratories; voluntary health associations; and ambulance services.

### i) Physicians and dentists

Until 1981 Health & Welfare Canada (HWC) estimated gross incomes of physicians and laboratories separately. Estimates since 1982 are for the combined operations of physicians and laboratories, so the output for physicians is estimated using the movement of this new series applied to the 1981 output estimate. HWC also provides gross output data for dentists. The output for physicians and dentists includes real estate rent from *Corporation Financial Statistics*.<sup>5</sup> Total output is split into corporate and unincorporated components. The corporate portion of output is calculated from *Corporation Financial Statistics* data and then deducted from total output to obtain the output for unincorporated businesses.

Prior to 1982, data on the gross and net incomes of physicians and dentists were available from HWC. Since then, net income has been estimated using Revenue Canada<sup>6</sup> net/gross income ratios applied to gross revenues of unincorporated business.

Corporate surplus is calculated using *Corporation Financial Statistics* data. Revenue Canada tax data are used to calculate the surplus component (depreciation) for unincorporated businesses. Wages and salaries data are obtained from the Labour Division data based on T-4 returns.

The commodity content of intermediate expenses is estimated using expense data from samples of Revenue Canada tax data.

### ii) Medical and other health laboratories

This component of other health and social services includes laboratories providing analysis and diagnosis to the medical profession. Medical, radiological, public health and other health laboratories are included.

<sup>2</sup> Revenue Canada Taxation, *Taxation Statistics, Annual* (Ottawa).

<sup>3</sup> Statistics Canada, *Corporation Financial Statistics, Annual*, Catalogue No. 61-207 (Ottawa).

<sup>4</sup> Statistics Canada, *Health Reports - Volume 1, List of Canadian Hospitals*, Catalogue 82-003S Quarterly.

<sup>5</sup> See footnote 3, p. 50.

<sup>6</sup> See footnote 2, p. 50.

The gross output of laboratories is calculated by deducting the output of physicians from the combined output, provided by HWC, of physicians and laboratories. The corporate output estimate is derived by using *Corporation Financial Statistics* data for other health services. The portion relating to laboratory output is estimated using a 1979 ratio of laboratory to other health services.

Intermediate inputs are estimated using expense data from samples of Revenue Canada tax returns.

Before 1982, net income for unincorporated laboratories was provided by HWC. Net income since 1982 is estimated using Department of National Revenue net/gross income ratios applied to gross output. Operating surplus is calculated from *Corporation Financial Statistics* data and uses the laboratory to other health services ratio mentioned earlier to calculate the corporate surplus for laboratories.

### **iii) Paramedical practitioners**

This category includes chiropractors, optometrists, podiatrists, osteopaths and physiotherapists. Gross income data (output) are supplied by HWC. Net income is derived from tabulations of Revenue Canada tax data. Commodity content of intermediate inputs is estimated using samples of Revenue Canada tax data.

### **iv) Voluntary health services**

Output for voluntary health services was obtained from benchmark 1971 and 1980 occasional surveys from the Services, Science and Technology Division. Output was estimated for all other years using the movement of outputs of physicians and dentists.

### **v) Private duty nurses**

Salaries and wages data supplied by the Labour Division constitute the output for this group.

### **vi) Red Cross, Victorian Order of Nurses and St. John's Ambulance**

Output, salaries and wages, supplementary labour income, operating surplus and intermediate inputs were calculated from revenue and expense detail available in annual reports.

### **vii) Ambulance**

Output, intermediate inputs and GDP for this category were derived from Revenue Canada tax data.



## Chapter 7

### Business, Accommodation, Food and Beverage and Other Service Industries

This chapter covers sources and methods for business, accommodation, food and beverage and other service industries which, prior to 1981, included the following Input-Output industries at the L level of aggregation:

- Other business services
- Professional business services
- Advertising services
- Accommodation and food service industries
- Motion picture and video industries
- Other amusement and recreational services
- Laundries and cleaners
- Other personal services
- Photographers
- Miscellaneous service industries

From the reference year 1981 the following industries have been further disaggregated as follows:

#### Other business services

- Computer and related services
- Miscellaneous business services

#### Accommodation and food service industries

- Accommodation service industry
- Food & beverage service industry

#### Motion picture and video industries

- Motion picture & video production and distribution
- Motion picture exhibition

#### Other amusement and recreational services

- Theatre, sports & recreational services
- Race track and gambling operations

#### Miscellaneous service industries

- Business associations, machinery and auto trade, leasing, other services
- Other repair, building maintenance services.

The output of each of these industries is measured in terms of gross receipts (except for trading activity) such as revenue from professional services, repair services, sale of meals, building and machinery rentals etc. The output of trading activity, if any, conducted by these industries is defined (similar to retail and wholesale trade), as a margin equal to sales less the cost of goods sold. For example, sales of alcoholic beverages in the accommodation and food service industries has been treated on a margin basis.<sup>1</sup> Service output is augmented by receipts from tips, when applicable, with an identical adjustment to wages and salaries and net income. That is, employees' tips are treated as an addition to wages

and salaries while tips received by self-employed workers are an addition to net income.

Inputs for these industries include commodity detail for fuel and electricity, materials and operating supplies, purchased services, salaries and wages and supplementary labour income (SLI), net income of unincorporated business, and the operating surplus. Operating surplus includes operating profit of corporate business, interest charges and depreciation of corporate and unincorporated business and an adjustment for inventory valuation, insurance claims, stock and bond commissions, and imputed interest. These adjustments are relatively small for most business and personal service industries.

### Overview

The following description of sources and methods for service industries in the business sector mainly covers estimation methods for the years 1971-1986.<sup>2</sup> The presentation reflects the procedures dictated by the availability of data for specific time periods.

### 1. Output

#### A) 1971-1981 Output

The 1971 establishment-based census provided data on receipts by kind-of-business (KOB) and some details of operating expenses. This type of census was not done after 1971. Annual and occasional surveys, however, covered some industries. In 1982, preliminary revenue data became available for selected service industries. Consequently a variety of sources and estimation techniques have been used to fill the data gaps. These sources were: annual and occasional surveys of service industries like *Traveller Accommodation Statistics*, *Motion Picture Theatres and Film Distributors etc.*, *Corporation Financial Statistics* for incorporated business, and Revenue Canada annual taxation statistics for unincorporated business. Revenue Canada taxation data for gross and net business income are the basic source of data for the unincorporated business portion of industries. Most categories in the Fine Occupational Code data match with an industry (e.g., photographers) but some are aggregated (e.g., other repair shops).

<sup>1</sup> The consumer who purchases an alcoholic beverage in a restaurant, lounge, etc. is shown as purchasing the value of the beverage directly from the store plus the value of "Service margin on alcoholic beverages" from the restaurant, etc.

<sup>2</sup> Estimates for service industries for the 1961-1971 period are based on similar methodology. There were censuses for 1961 and 1966. The 1961 census was very comprehensive in terms of expense detail. The 1966 census did not collect expenses except for wages and salaries.

The publication *Corporation Financial Statistics* uses the 1960 SIC. This classification identifies some I.O. industries explicitly (e.g., laundries). Other I.O. industry components such as auto and truck rentals, and machinery rentals cannot be identified and measured because of a higher level of aggregation. Business register coding allowed the transformation of corporate revenue based on 1960 SIC to a more detailed 1970 SIC for the years 1979-81. There were still some corporations which could not be classified because of coding problems. In these cases, the estimates for an industry had to be considered to represent minimum revenue levels.

At the time of the 1961-1981 CSNA historical revision<sup>3</sup>, some new data sources became available. These sources consisted of preliminary revenue and expense results of the Services, Science and Technology Division (SSTD), formerly Services Division surveys of selected business and personal services; the Labour Division T-4 detail of wages and salaries on 1960 SIC and on the 1970 SIC; and the Revenue Canada net and gross income of unincorporated business on a 1980 SIC (Tax Record Access). These new source data were used to revise the estimates of industries for 1961-1981.

The following summarizes procedures used to develop estimates of output for the period 1971-1981:

- a) Estimates for industries like computer services, accommodation and food services, motion picture exhibition, production and distribution, were based on annual survey data.
- b) Estimates for machinery, car leasing and other services, auto and truck rentals, architects and engineering were developed using the 1971 Census data. Revenue was interpolated between occasional survey years.
- c) Estimates for lottery data were obtained from annual reports and Agriculture Canada reports for race tracks.
- d) Estimates for accountants and lawyers were developed using the data from *Corporation Financial Statistics* and Revenue Canada unincorporated business taxation files. The outputs of barber and beauty services and laundries were projected using population data and family expenditure surveys.

As stated, corporate revenues for 1979 to 1981 are on the 1970 SIC. 1982 preliminary survey data from the Services, Science and Technology Division and T-4 wages and salaries data were used to reassess previous output estimates for 1961-1981. Some industry revenue levels were adjusted and then worked back to

1971 (e.g., other recreation and miscellaneous business services).

The distribution of industry revenues was estimated using commodity detail from the 1971 Census, annual and occasional surveys and the 1982 preliminary survey results.

## B) 1982-1986 Output

For this period, the following sources were used for industry revenues:

- a) Services, Science and Technology Division (SSTD) surveys of *Selected Service Industries in Canada*<sup>4</sup>, 1982-1984 were used for industries covered by the survey. These surveys provided revenue data for 1982-1984 by detailed (three-digit and four-digit 1980) SIC for both corporate and unincorporated business components. Estimates of revenue from the survey were compared with Revenue Canada data for corporate and unincorporated business. Details of type of receipt and receipts by class of customer were also available.

A second release of *Selected Service Industries in Canada* covered data from 1983 to 1985. For the 1984-1986 period two new publications<sup>5</sup> replaced the publication *Selected Service Industries in Canada*. The Input-Output Division now receives machine readable files from the Services, Science and Technology Division that disaggregate revenues at the four-digit 1980 SIC level into surveyed versus non-surveyed portions of the industries<sup>6</sup>, corporate, unincorporated etc. In addition, considerable revenue and expense detail is available for the surveyed portion of the industry. The revenue detail covers revenue from the principal service produced and other revenues like repairs,

<sup>3</sup> A historical revision of the Canadian System of National Accounts including the Input-Output tables is done every ten years to include revised source data and other improvements in the information. The last such revision was done in 1984-1987 for the period prior to and including the 1981 data year.

<sup>4</sup> Statistics Canada, *Selected Service Industries in Canada, 1982-84. Catalogue No. 63-231* (Ottawa, 1987).

<sup>5</sup> Statistics Canada *Business Service 1984-1986. Catalogue No. 63-232* (Ottawa). Statistics Canada *Leisure and Personal Service 1984-1986. Catalogue No. 63-233* (Ottawa).

<sup>6</sup> The Services, Science and Technology Division collects detailed data for firms with revenue of more than \$ 250,000. Firms with revenue below that level have only summary data assembled from taxation sources. The former universe is called the surveyed portion and the latter the non-surveyed portion. For business entities falling below the \$250,000 cut off, the data for corporate firms are taken from Revenue Canada T-2 tax files, and data for unincorporated business are based on a sample of T-1 financial returns submitted to Revenue Canada.

rentals, sales of food and non-alcoholic beverages, sales of merchandise, miscellaneous services and other operating revenue. Expense detail includes information on the cost of sales to permit estimating margins on trading activity.

- b) Data were obtained from other annual, or occasional surveys conducted by the Services, Science and Technology Division for industries not covered by Surveys of Selected Service Industries. These industries are computer services, architects, engineering and scientific services, accommodation and food services, motion picture production and distribution, and motion picture theatres.
- c) Estimates of revenues for other service industries (e.g., accountants and lawyers) were based on Revenue Canada gross business income data for corporate and unincorporated business.
- d) Revenues for lotteries came from reports of lottery corporations, and for race tracks from Agriculture Canada reports. Estimates for day-care and other child care were based on Family Expenditure Surveys and Public Finance data.
- e) Revenues for 1984-1986 tabulated from T-2 corporate data (CORPAC tape) for the 1980 SIC detail were provided by the Industrial Organization and Finance Division. Revenue levels from this source were compared with estimated or survey revenues and were also used to estimate revenues for some non-surveyed areas (e.g., courier services).

## 2. Intermediate Inputs

The 1971 Census provided extensive detail for intermediate inputs of services such as rental of land and buildings, rental of motor vehicles and other machinery and equipment, taxes, permits and licenses, purchased delivery services, advertising and sales promotion, repair and maintenance, legal, audit and other professional fees, communication, travel and entertainment, and insurance. Material inputs such as heat, light, power, water, packaging supplies and office and miscellaneous supplies were also specified. Estimates of inputs for subsequent years were developed for the following sub-totals: fuel and electricity; materials and operating supplies; purchased services; indirect taxes and subsidies. The detail under each sub-total was estimated using the following sources:

- a) Available expense detail was used from annual or occasional Services, Science and Technology Division surveys, such as surveys of computer services,<sup>7</sup> architects and engineers,<sup>8</sup> motion picture and video;<sup>9</sup>

- b) *Corporation Financial Statistics* data were used for expense detail of royalties, repair and maintenance, rents and indirect taxes;
- c) Price and quantity indices were used to project some commodity inputs;
- d) Periodic samples of input detail were tabulated for samples from T-2 corporate returns and T-1 unincorporated business returns;
- e) Other sources included company reports (e.g., for lotteries) and industry reports (e.g., food and accommodation);
- f) Input detail was also obtained from surveys of selected service industries. Since 1982 operating expense detail for the surveyed portion of the universe is provided by the Services, Science and Technology Division. The surveyed portion is also called the panel. This detail includes salaries and wages, bonuses and commissions paid to employees; employee benefits; rent and/or leasing of land and buildings; motor vehicles; rental of computer equipment; rental of other machinery and equipment; repairs and maintenance; legal, accounting and auditing fees; advertising and sales promotion; insurance; taxes, permits and licenses (excluding income taxes); heat, light, power and water; telephone, telegraph, telex and postage; travel and entertainment; royalties and franchise fees; depreciation and amortization; interest expense; all other supplies and materials used in the business; all other operating expenses and total operating expenses.

Some expense details match with I.O. commodities while others are aggregative and need to be split into I.O. commodities. For example, heat, light, power, and water have to be broken out into natural gas, fuel oil, electric power and water charges, etc.

## 3. Gross Domestic Product

### A. Salaries and wages

The 1971 Census provided data on salaries and wages for each industry. Initial estimates (before the historical revision) of wages and salaries for 1972-1981 were based on the following procedures:

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- <sup>7</sup> Statistics Canada, Computer Service Industry. Annual Catalogue No. 63-222 (Ottawa).
  - <sup>8</sup> Statistics Canada, Offices of Architects, 1977. Catalogue No. 63-534 (Ottawa, 1979).  
Statistics Canada, Architectural, Engineering and Scientific Services. (1978 and 1982). Catalogue No. 63-537 (Ottawa, 1980 and 1984).
  - Statistics Canada, Consulting Engineering Services, 1974. Catalogue No. 63-528 (Ottawa, 1976).
  - <sup>9</sup> Statistics Canada, Motion Picture Theatres and Film Distributors. Annual, Catalogue No. 63-207 (Ottawa).  
Statistics Canada, Motion Picture Production. Annual, Catalogue No. 63-206 (Ottawa).

- (i) Unincorporated business salaries and wages data from the 1971 Census were projected forward based on gross income. Corporate salaries and wages data were expressed as a ratio to revenues. This ratio was then updated using the trend of the ratio of annual corporate salaries and wages to revenue from financial statistics. The updated ratio was applied to corporate revenues to derive the corporate portion of the salaries and wages estimate.
- (ii) Salaries and wages data from the 1971 Census, and from subsequent annual or occasional surveys, were also used. Survey ratios of salaries and wages to revenues were projected or interpolated when necessary (e.g., for architects, and for engineering and scientific services).
- (iii) Salaries and wages were estimated for some industries using a composite labour index when the detail of the 1960 SIC-based corporate industry data were not comparable to the industry being measured and could not be used. The composite index was derived from related indices of employment and of average weekly wages produced by the Labour Division's ES-1 survey of establishments with more than 20 employees.

New data became available from the Labour Division during the historical revision of the Canadian System of National Accounts. Salaries and wages data by industry from T-4 files became available for 1973 to 1981 (on 1960 SIC basis). As part of the revision, the detail of T-4 data was used to re-assess the initial level and trend of salaries and wages. Adjustments to previous estimates of salaries and wages were made when necessary. The revision was carried back to 1961 to adjust for the higher Labour Division wages and salaries for commercial services. Also examined were the ratios of salaries and wages to revenues from Services, Science and Technology Division's 1982 preliminary survey. Estimated salaries and wages for service industries were adjusted to the control total of salaries and wages for commercial services data obtained from the Labour Division.

Estimates of salaries and wages for 1982-1986 used survey data and Labour Division T-4 data. The T-4 data from 1983 onward are on the more detailed 1970 SIC basis. The T-4 detail of salaries and wages provided by the Labour Division was compared to salaries and wages estimated from reported expense detail obtained from the Services, Science and Technology Division.

The surveyed portion of selected service industries provided data on salaries and wages and SLI. Ratios of these expenses were calculated and applied to total operating revenues to provide a first estimate of these labour income

components by industry. These estimates were compared to the Labour Division T-4 data (1970 SIC) for comparable components of Input-Output industries (e.g., services to buildings and dwellings, auto and truck rental). Estimated salaries and wages and Labour Division T-4 detail were reasonably close (within 5%) especially where the surveyed portion of the industries represented a significantly high proportion of revenues.

Published values for salaries and wages were used when available (e.g., for computer services). For unsurveyed industries, salaries and wages were estimated using T-4 data (e.g., accountants and bookkeepers, lawyers). Some estimates were based on other sources (e.g. annual reports for lotteries, estimated ratios suggested by day care officials).

## B. Net income of unincorporated business

Revenue Canada taxation data obtained up to the 1986 data year contain details of gross income, net income, and capital cost allowance for about 30 Fine Occupation Code classes (FOCs). This information is available for business and professional income along with other types of income (rental, farms, fishing, commission). More than half of these two-digit SIC type classes match industries of the Input-Output accounts.

Absolute net and gross income figures from taxation data were compared to 1971 Census data and to occasional survey data. In some cases, values were close. In other cases, taxation data for gross income and the ratio of net to gross income were lower than in the 1971 Census and/or occasional survey data. These estimates were raised to the Census level for 1971, then projected forward based on the movement of gross income and net/gross ratios from taxation data.

Another taxation data source became available more recently. The Tax Record Access (TRA) Sub-Division, Classification Systems Branch, Statistics Canada samples unincorporated data as Revenue Canada does. It covers only tax filers with business income (excluding professional and commission income filers) and codes these to the four-digit 1980 SIC industry classification. This source is now used with the Fine Occupation Code classes to estimate net income. Industry detail on the 1980 SIC for most industries is available for gross business income, net income, and some expense data (e.g., salaries and wages).

## C. Operating surplus

The 1971 Census allowed for a calculation of surplus for incorporated business and unincorporated business separately, for all industries.

For subsequent years, surplus for some industries like computer services, architects and engineers, motion picture production and distribution was estimated using the available survey data. For other industries, surplus estimates for the corporate portion of the industries were benchmarked to the 1971 Census and projected forward based on surplus/revenue trends from *Corporation Financial Statistics*.

In recent years, the surveyed portion of industries covered by the Services, Science and Technology Division's Survey of Selected Service Industry has been the main source of data for operating surplus. *Corporation Financial Statistics* data are also used, although the industrial detail from this source is much more aggregated.

The 1971 Census also generated an estimate of "other surplus" for unincorporated business, which mostly covers interest paid and depreciation. This is a minor percentage of gross business income. The 1971 ratio of "other surplus" to gross business income was applied to unincorporated gross business income for subsequent years. Revenue Canada data were also examined for the capital cost allowance component of surplus for unincorporated business. For recent years, the principal sources of such data are Revenue Canada capital cost allowance data by fine occupation code (FOC) and tabulations of depreciation for unincorporated business by the Tax Record Access Sub-Division of Statistics Canada.

Operating surplus includes profit (before income taxes and dividends), depreciation and interest paid and subsidies received. Estimated surplus from the business surveys includes adjustments for net bad debt, capital items charged to current expenses, charitable donations, insurance claims, stock and bond commissions, imputed bank service charges, the inventory valuation adjustment (IVA), and depreciation of capital leases that should be charged to other industries but are included with own-asset depreciation. The capital items charged to current expenses come from capital expenditure detail. The depreciation of capital leases, charitable donations and net bad debt adjustments come from *Corporate Taxation Statistics*. Insurance claims, stock and bond commissions and net bank charges are derived from detail for the finance sector. The IVA for each industry is based on reported inventories from the survey, or tax file data. Detail of expenditures from public accounts is used to allocate subsidies to industries. These adjustments to surplus were relatively small in value for most service industries.

A summary of values of output, intermediate inputs and GDP of business services industries is given in Text Table 11. Input-Output value of

industry output will differ from other published values of receipts for the following reasons:

- 1) Published receipts include gross sales of goods purchased for resale, while Input-Output tables consider their output to be trading activity margins (sales less cost of goods sold).
- 2) Service receipts of some industries are augmented for undercoverage, tips and paid food and lodging.
- 3) Input-Output production does not include non-operating revenues.

A percentage value for the "estimated" portion of the data at the L level of industry detail is given in the text table for gross output, intermediate inputs and GDP. This represents the percentage of data which is not directly obtained from annual survey and/or administrative data. Estimation is based upon periodic and partial information. Some examples are:

- 1) Upward adjustments to production, intermediate expenses and GDP for undercoverage.
- 2) Estimation of intermediate expense detail from partial information.
- 3) Application of adjustment factors to net and/or gross income from taxation data to match Census and occasional survey levels.

#### **4. Sources and methods for individual business sector service industries**

##### **1) Other business services**

Other business services industry includes establishments providing computer and related services, and those providing miscellaneous business services (e.g., personnel and employment agencies, management consultants, and other services to business management).

##### **a) Computer and related services**

The output of this industry includes software services, rental of data processing equipment (including processing services), repair services, and gross margins earned on goods purchased for resale.

From the reference year 1971 onward, establishments primarily engaged in renting data processing equipment or software services were removed from the manufacturing industry and classified to the service industry. The computer service industry publication<sup>10</sup> provided revenue data separately for establishments providing software services and for establishments engaged in

<sup>10</sup> See footnote 7, p. 55.

Text Table 11

**Business, Accommodation, Food and Beverage and Other Service Industries, 1986 estimates in millions of dollars with percentage estimated for each component**

	Output	Intermed. Inputs	Net Indirect Taxes	GDP at Factor Cost	GDP Share %
Millions \$					
<b>Other Business Services</b> % estimated	9,507 8%	2,762 15%	-11 30%	6,756 11%	16
<b>Professional Business Services</b> % estimated	12,150 6%	3,284 68%	-47 100%	8,913 6%	21
<b>Advertising Services</b> % estimated	1,745 1%	617 40%	11 30%	1,116 12%	3
<b>Accommodation and Food Services</b> Total % estimated	19,979 9%	7,840 26%	531 10%	11,609 12%	28
<b>Motion Picture and Video Industries</b> % estimated	1,406 2%	952 43%	17 100%	438 3%	1
<b>Amusement and Recreational Services</b> % estimated	5,121 6%	1,691 30%	-260 10%	3,690 10%	9
<b>Laundries and Cleaners</b> % estimated	1,392 18%	449 44%	23 30%	919 20%	2
<b>Other Personal Services</b> % estimated	3,983 32%	872 27%	43 20%	3,069 43%	7
<b>Photographers</b> % estimated	384 7%	146 44%	4 10%	234 12%	1
<b>Miscellaneous Service Industries</b> % estimated	7,037 8%	1,864 36%	95 30%	5,078 9%	12
<b>Total</b> <b>% Estimated</b>	<b>62,704</b> <b>9%</b>	<b>20,477</b> <b>34%</b>	<b>405</b> <b>19%</b>	<b>41,822</b> <b>12%</b>	<b>100</b>

Note: Totals may not add due to rounding.

sales, leases and rentals. The data include revenue from software services, rentals, repair services and margins on goods purchased for resale.

Expense details for both types of establishments were obtained separately until the year 1977. For 1978 to 1982 expense data were available for only the software services part of the industry. Expense detail for establishments engaged in sales, leases and rentals was limited to wages and salaries and other operating expenses such that expenses from a sample of major companies from corporate data were used.

Salaries and wages and employee benefits for the industry were obtained from published data. Total revenue less total current expenses yielded an estimate of total operating surplus including net income.

From this estimate, net income obtained from Revenue Canada taxation data was deducted to obtain an estimate of operating surplus.

In 1986, substantial revision – detailed in the publication for that year – took place in the computer service industry survey universe. Establishments that were primarily hardware vendors (including repair and maintenance) were reclassified to wholesale trade. In addition, Revenue Canada taxation data were used to estimate the low-end segment of the industry. The main revenue and expense data were published, based on a sample of firms representing about 80% of the industry's total revenues.

Operating expense detail was available for: occupancy costs (including some depreciation); supply purchases; software and computer rental; costs of legal, audit and professional services; insurance; data

communication charges; and a residual category covering all other expenses. These data were used to establish the control total of expenses, which was then disaggregated into commodity detail using survey information and past patterns of expenses.

Data for salaries and wages and employee benefits are also provided by the survey. Input-Output surplus plus net income is calculated by subtracting the adjusted operating expenses from revenues. This adjustment involved removing depreciation and amortization, estimated depreciation included in occupancy costs, and interest paid from the reported operating expenses. An estimate of the net income of unincorporated business obtained from Revenue Canada taxation data is deducted from the estimated surplus plus net income to yield other operating surplus.

#### b) Miscellaneous business services

This industry covers services sold mostly to businesses. The 1971 Census<sup>11</sup> included employment agencies, credit bureaus, custom brokers, telephone answering services, reproduction services, management and business consultants and an "all other" miscellaneous business services category. Courier services were included under the 1960 and 1970 SIC definition of miscellaneous business services but were not covered by the 1971 Census. Estimates made for courier services are included in the Input-Output miscellaneous services industry.

The 1971 receipts for this industry were initially projected forward, based on a composite labour income index (combining average weekly wage and number of employees indices) obtained from the Labour Division ES-1 survey. However the revenue levels estimated from these projections were found to be too low. A detailed examination of corporate financial data for 1976 pointed to a revenue shortfall. Labour Division salaries and wages data from T-4 sources for 1973-1981, and the 1982 Services, Science and Technology Division preliminary survey data, which became available at the time of the historical revision, also indicated that salaries and wages (and revenues) should be raised for the industry. Accordingly, wages and salaries and revenues were adjusted upward from 1971 to 1981.

Operating surplus was estimated using the Census ratio of surplus to revenue and projected forward with the ratio of corporate

surplus to revenue. Net income was estimated using the Census ratio of net income to unincorporated business revenue. There were no explicit Revenue Canada taxation data series from which the net/gross movement could be observed.

Services, Science and Technology Division data on miscellaneous business services revenues (excluding courier services) were used for the 1982-1986 period. A relatively small estimate was made to capture revenues of management consultants (1980 SIC 777) not covered by the Services, Science and Technology Division survey.

Expense ratios (including GDP components) from the panel of respondents to the Services, Science and Technology Division survey were applied to corporate and unincorporated industry revenues at the three-digit level of 1980 SIC and aggregated to the level of the Input-Output miscellaneous business services industry. Estimated salaries and wages for all components of this industry were about 2% higher than the Labour Division T-4 level in 1986. Surplus was estimated using Services, Science and Technology Division ratios calculated for the corporate portion, and taxation data were used for the unincorporated portion. Net income was estimated using net to gross income ratios from TRA based taxation data applied to unincorporated business gross revenues.

The courier services portion was estimated separately for 1971 and for subsequent years, based on the revenue trend of a sample of large courier companies covered by the *Corporation Financial Statistics* data. Since 1984, explicit four-digit revenue data for this industry from the Industrial Organization and Finance Division's 1980 SIC-coded T-2 tape have been used. A sample of large companies was used to estimate expense detail, salaries and wages, and surplus. Net income was obtained from Revenue Canada TRA based data.

#### 2) Professional business services

This industry includes: accountancy services (including bookkeeping); legal services (lawyers and notaries); architectural services; and engineering and scientific services.

<sup>11</sup> Statistics Canada, *Census of Canada, 1971, Service Trade, Business Establishment Statistics, General Statistics*. Catalogue No. 97-747 (Ottawa, 1977).

### a) Accountancy services

The 1971 Census data were used for benchmark revenue estimates. Corporate revenues in 1971 were minimal – less than 5% of total revenue. The major share of revenue was earned by unincorporated business, such that gross and net revenue data from Revenue Canada were examined. Some double counting of partnerships was observed in Revenue Canada data for 1971-1976. Estimates from 1976 forward were edited by Revenue Canada to eliminate duplication, so the 1976 gross professional income was used as a benchmark for the unincorporated portion. The corporate portion of revenue data obtained from *Corporation Financial statistics* was added to the estimated unincorporated revenue to obtain an estimate of total output for 1976.

For the period 1972-1975, gross income for unincorporated business was estimated using the net income from Revenue Canada and an adjusted gross/net ratio. This ratio was calculated as follows: current commodity intermediate inputs to accounting services were projected from the 1971 benchmark, using an index of the total number of self-employed accountants and the relevant price index. Wages and salaries from T-4 data (estimated for 1972) and net income from Revenue Canada were added. The sum of these current expenses, wages and salaries, net income and depreciation, yielded a projector for gross income. The sum of these inputs represented about 90% of total expenses. The ratio of gross/net income developed from this sum was used to interpolate the 1971 gross/net ratio between 1971 and 1976.

Revenue Canada gross and net revenue data were used with little adjustment for the period 1976-1986 to calculate net income. The corporate portion of revenues was obtained from *Corporation Financial Statistics*. Surplus and net income were also based on the same sources. Data from the Labour Division from T-4 sources provided the estimate of wages and salaries. Intermediate inputs were estimated separately for the corporate and unincorporated portions of the industry using a sample of tax returns.

### b) Legal services

Legal services include lawyers and notaries. The Census revenue data were used for 1971. Revenue estimates for

subsequent years were based on gross professional income from Revenue Canada data.

The Census net/gross income ratio was higher than the taxation data in 1971, so Revenue Canada net/gross ratios were adjusted upward. These net/gross ratios dropped from 1975 to 1980, while average net income (the value of net income divided by the number of self-employed persons) demonstrated a fairly regular trend. A duplication of partnership revenue was discovered in the gross income series. Revenues of unincorporated business for 1977 to 1980 were therefore estimated in the same way as the sum of expenses for accountants. Revenues of the corporate portion of this industry began to appear for the year 1975 in the *Corporation Financial Statistics* and were added to the unincorporated business revenue data to arrive at total legal service revenues.

The 1971 Census salaries and wages data were initially projected using a composite index derived from an index of average weekly wages and employees from the Labour Division ES-1 survey. The T-4 salaries and wages data were compared to this series at the time of the historical revision. The T-4 legal services salaries and wages data for 1973 approximated the 1971 Census data, and appeared to be low estimates. The trend of the T-4 series from 1973-1981 was applied to the 1973 estimated wages and salaries to obtain wages and salaries from 1973 onward.

Revenues for the 1981-1986 period were obtained from *Corporation Financial Statistics* data. Unincorporated gross business income data were taken from taxation sources. Salaries and wages were estimated at the total industry level by taking the higher level of 1981 salaries and wages data and applying the year-by-year growth rate of the T-4 data. Net income of unincorporated business data was obtained from taxation statistics. The surplus for the corporate portion was obtained from *Corporation Financial Statistics* data. Surplus for unincorporated business was estimated using the Census ratio of surplus to revenue. Intermediate inputs were estimated from periodic samples of tax returns and surveys of Canadian law firms.<sup>12</sup>

<sup>12</sup> Canadian Bar Association National Law Firm Society, 1985.

### c) Architectural services

Revenue estimates for architectural services measure gross professional fees. The 1971 Census provided total revenues, but did not break down into corporate and unincorporated business revenues. The offices of architects were surveyed again in 1977<sup>13</sup> and in 1982<sup>14</sup> and a split for corporate and unincorporated receipts was taken from these benchmark surveys. Corporate receipts were estimated back to 1971 from 1977 data. The unincorporated fee revenues from the survey in 1977 were about 10% higher than the 1977 Revenue Canada data, so unincorporated business revenues were raised throughout the time period. Net/gross ratios from the 1977 census were also higher than net/gross ratios from the Revenue Canada data, so small upward adjustments were made to net income estimates.

The 1971 Census provided expense detail for major inputs: professional fees, rentals, utilities, etc. The expense detail for the 1977 and 1982 surveys was matched to the 1971 Census detail and coded to Input-Output commodities; for instance, occupancy cost was disaggregated into fuel oil, electricity, building rental, etc.

Salaries and wages were estimated at the total industry level using 1971, 1977 and 1982 salaries and wages to revenue ratios as benchmarks. Ratios of salaries and wages to revenue were interpolated between benchmark years and applied to revenues to generate salaries and wages estimates. Adjusted net/gross ratios were applied to gross business income to obtain net income. The corporate surplus to corporate revenues ratios from the survey were similarly interpolated between the benchmark years, and were also applied to corporate revenues.

Revenues for 1984 and 1985 were estimated using corporate data from the CORPAC tape and unincorporated revenue data from Revenue Canada. Revenues for 1986 came directly from the 1986 survey of architects.

The 1986 survey obtained expense detail from a panel of firms. The expense detail consisted of items such as: salaries and wages; employee benefits; occupancy costs; equipment rental; legal, accounting, audit and management fees; insurance costs; sub-consultant fees to architects, engineers and other consultants; and depreciation.

Estimated salaries and wages from survey data in 1986 were very close to Labour Division's T-4 salaries and wages

data. SLI was estimated using expense detail for the panel of firms. The 1986 corporate surplus estimate, and net income, were calculated from survey data.

### d) Consulting engineers, other engineering and scientific services

The 1971 Census receipts of engineering and scientific services data consisted of fee income receipts, goods purchased for resale (GPRS), and royalties. Consulting engineers were also surveyed in 1974, in 1978 and 1982.<sup>15</sup> Other engineering and scientific services were also surveyed in 1978 and 1982. These surveys provided benchmark data for estimates from 1971-1982.

Companies included in the 1978 Census of consulting engineers and other engineering and scientific services were compared with those in the *Corporation Financial Statistics* listings. The 1978 Census revenue data were adjusted upward for undercoverage of a few companies. The 1982 revenues were also adjusted upward for firms excluded from the data in the publication, where the nature of business detail was insufficient to classify them to consulting versus other engineering. The adjusted 1978 and 1982 revenue values were in the range of revenues produced from the calculation of 1970 SIC revenues (using Business Register coding) for 1979 to 1982. The upward revenue adjustments for undercoverage were carried back to the 1971 Census year at the time of the historical revision. These adjustments were carried back separately for consulting engineers and other engineering services.

The adjusted consulting engineering revenues were used for 1971, 1974, 1978 and 1982. A salaries and wages composite index from the Labour Division was used to interpolate revenues between 1971 and 1974. An index of the T-4 salaries and wages series was used to interpolate revenues between 1974 and 1982. Other engineering and scientific services revenues were set in 1971, 1978 and 1982, and were interpolated between these years using a salaries and wages ES-1 - based composite index.

<sup>13</sup> Statistics Canada, Offices of Architects, 1977, Catalogue No. 63-534 (Ottawa, 1979).

<sup>14</sup> Statistics Canada, Architectural, Engineering and Scientific Services, 1978 and 1982, Catalogue No. 63-537 (Ottawa, 1980 and 1984 resp.).

<sup>15</sup> Statistics Canada, Consulting Engineering Services, 1974, Catalogue No. 63-528 (Ottawa, 1976).

Statistics Canada, Architectural, Engineering and Scientific Services 1978 and 1982, Catalogue No. 63-537 (Ottawa, 1980 and 1984 resp.).

Salaries and wages were estimated separately for consultants and other engineering and scientific services. Salaries and wages to revenue ratios for the Census benchmark years were interpolated linearly to generate ratios for intervening years. These ratios of salaries and wages to revenue were applied to estimated revenues to generate estimated salaries and wages.

The GDP to revenues ratio was calculated for the Census benchmark years and interpolated between. GDP less estimated salaries and wages and supplementary labour income yielded a residual net income and operating surplus. The value of surplus was obtained by deducting net income from this residual. The *Corporation Financial Statistics* data for the 1960 SIC 864 code (engineering and scientific services) contained many non-engineering companies, and could not be used to directly calculate corporate surplus.

The engineering surveys collected gross business income data for unincorporated business for consulting and other engineering and scientific services. The 1971 and 1978 surveys' gross business income data matched Revenue Canada gross income data, with a slight difference in 1982. Net income was estimated using Revenue Canada taxation data.

Revenues for the industry for 1983-1985 were estimated using corporate revenues (CORPAC tape revenues 1984, 1985) combined with unincorporated revenue data. Salaries and wages were estimated using Labour Division T-4 data. Corporate surplus was estimated using net profit to revenue ratios from corporate data (CORPAC tape). Net income was estimated using Revenue Canada taxation data.

Revenues and expenses for all components of the industry were obtained from survey data for 1986.<sup>16</sup> Expense detail from the 1986 survey included: salaries and wages; employee benefits; occupancy costs; legal, accounting and audit fees; depreciation; and professional liability insurance. Consulting engineers provided detail on sub-consultant fees paid to engineers, architects and other consultants. The engineering and scientific services survey provided sub-consultant fees, including fees paid to technicians. Both surveys also collected information on purchased materials and supplies.

The estimate of salaries and wages and employee benefits from published 1986 survey data were split according to the

proportions of the panel expenditures. Survey operating revenues less appropriate operating expenses yielded a "residual net operating income", which includes surplus and net income. The net income of unincorporated business (from taxation data) was deducted from this residual to estimate operating surplus.

### 3) Advertising services

This industry consists of establishments primarily engaged in advertising for commissions or fees. Revenue originates from fees for advertising (including production work), market surveys, and other services. Establishments acting as media representatives, renting space on outdoor displays and billboards, and providing other advertising services are also included.

Data from the 1971 Census were the basis for calculating the distribution of receipts for services, sales of goods purchased for resale (GPRS), and rental of machinery and equipment. Real estate rent was estimated from *Corporation Financial Statistics* data. Data for 1971 are provided for corporate and unincorporated establishments separately, and offer values on revenues, salaries and wages, expense detail, and surplus and/or net income.

Output from 1972 onward was projected using data on net advertising revenues by different types of media from the MacLean Hunter Research Bureau. Advertising elements unrelated to the advertising services industry were excluded (e.g., phone directories). The projected output was split into components based on the 1971 distribution. The trend and level of these revenues were compared to corporate taxation revenues.

In 1971, advertising agency revenues accounted for close to 50% of total advertising services revenue. Survey data for 1971-1977<sup>17</sup> were used to estimate revenue and expense for this portion of the industry. Intermediate expense, surplus and salaries and wages ratios to revenue from corporate data were used to update these expense items. The 1971 Census net/gross business income ratios were used to estimate net income until the Tax Record Access source became available<sup>18</sup>. There was no explicit occupation code in the FOC Revenue Canada source.

<sup>16</sup> Statistics Canada, *Architectural, Engineering and Scientific Services. Occasional Catalogue No. 63-537* (Ottawa).

<sup>17</sup> Statistics Canada, *Advertising Agencies. Annual* (last issue covers 1977). Catalogue No. 63-201 (Ottawa, last issue 1979).

<sup>18</sup> The Tax Record Access Sub-division data on the four-digit 1980 SIC.

Revenue and expense data from the Services, Science and Technology Division survey<sup>19</sup> were used in more recent years. Services, Science and Technology Division revenue data are presently on a net billing basis (net of recoverable expenses). Intermediate input detail was obtained from the reporting panel. Salaries and wages and SLI were estimated from reporting panel expense ratios. Surplus was also calculated from panel data. Net income was obtained from the more recent Revenue Canada source (Tax Record Access).

#### 4) Accommodation and food services

Since 1981, this industry has been assembled from two components: accommodation services, and food and beverage services. The accommodation service industry mainly produces the commodity accommodation, with some meals and a service margin on alcoholic beverages. The food and beverage service industry mainly produces the commodity meals and a service margin on alcoholic beverages.

##### a) Accommodation services

###### Revenues

The annual publication *Traveller Accommodation Statistics*<sup>20</sup> provides receipts data for hotels, motels, tourist courts/cabins, private and municipal campgrounds, tourist homes, outfitters (hunting and fishing camps), and tent and trailer campgrounds. Receipts are given for rooms, meals, alcoholic beverage sales, other merchandise, and other receipts.

An estimate of non-operating revenues included in the "all other receipts" category was removed. Estimates were made for the commodity content of the "all other receipts", (excluding non-operating revenues) which included services like personal services, rental of machinery and equipment, other rents, and other recreation services.

Receipts were adjusted upward to compensate for undercoverage in the hotels and motels industry. The input-output industry production totals also include an estimate for tips relating to accommodation, meals and alcoholic beverages. The service margin on alcoholic beverages, rather than sales, is taken as output in the Input-Output Accounts. The output of meals includes paid board and that of "other rent" includes an estimate of paid lodging. The estimate of paid board and lodging is provided by the National Accounts and Environment Division.

###### GDP components

*Traveller Accommodation Statistics* contains data for salaries and wages. These estimates were very close to the T-4 salaries and wages data. An estimate of tips was added to salaries and wages, and to receipts.

The 1971 census net income and net/gross ratios were higher than those in the Revenue Canada data. The adjusted Revenue Canada net/gross ratios were applied to unincorporated gross business income data from Revenue Canada to yield net income. Paid board and lodging was then added to net income.

Corporate surplus was calculated from *Corporation Financial Statistics* data but combines accommodation and food services. The 1971 Census ratios of surplus to revenue were applied separately to accommodation and to food service revenues to obtain relative weights for splitting the annual corporate surplus between the two industries. The "other surplus" ratio from the 1971 Census was applied to the unincorporated business income data to yield the unincorporated segment's surplus.

###### Intermediate inputs

Ratios of raw food to meals costs were used to obtain an estimate of raw food inputs. The commodity distribution available from the Food Service and Hospitality Survey<sup>21</sup> was used with certain adjustments (e.g., the accommodation industry uses more of certain types of food than does the food service industry because of different types of meals output).

The 1971 Census detail was used for other intermediate expenses. This detail of expenses was projected forward using expense detail given in *Canada's Hospitality Business*<sup>22</sup> which also provided data on expenses by various types of expenditure categories (e.g., marketing, payroll, energy costs).

Canadian Lodging Industry Survey data<sup>23</sup> were used to update accommodation expenditure patterns for 1981-1986. Percentages of sales were calculated by expenditure

<sup>19</sup> See footnote 5, p. 54.

<sup>20</sup> Statistics Canada, *Traveller Accommodation Statistics Annual*, Catalogue No. 63-204 (Ottawa).

<sup>21</sup> Food Service and Hospitality Magazine, *Food Service and Hospitality Survey*. (Toronto, 1984).

<sup>22</sup> Food Service and Hospitality, *Canada's Hospitality Business Magazine, Monthly*. (Toronto).

<sup>23</sup> Laventhal & Horwath, *The Canadian Lodging Industry Survey*, 1986. (Toronto, 1987).

type, such as for room rentals, food and beverages, telephone, and minor operating departments, administrative and general, marketing, property operation and maintenance, energy costs, etc. A detailed breakdown of expenditures, coded to Input-Output commodities, was estimated within each category. The "room department" category, for example, contains detail of expenditures on commissions, contract cleaning, laundry and dry cleaning, linen, reservation expenses, uniforms, operating supplies, and other operating expenses. The survey provides value detail for expenditures such as cost of goods sold, salaries and wages, rent, repairs, advertising, depreciation, heating and other expenses.

#### b) Food and beverage services

##### Revenues

The 1971 Census and the annual Survey of Restaurants, Caterers and Taverns<sup>24</sup> for 1976-1978 were used to benchmark net sales and receipts. Meals revenue for cafeterias run by universities (obtained from Statistics Canada's Post-secondary Education section) were added. Receipts were interpolated by kind-of-business for 1972 to 1975 using *Restaurant, Caterer and Tavern Statistics*.<sup>25</sup> This publication was also used to project net sales and receipts.

The restaurants, caterers and taverns publication for 1978 distinguished net sales and receipts for the following kinds of business: restaurants, licensed and unlicensed; drive-in and take-out food shops and caterers (industrial, social and mobile); refreshment stands and beverage rooms; and bars and night clubs. The publication shows net sales and receipts by province for meals and lunches, alcoholic beverages, and other operating receipts. Revised unpublished 1978 detail was obtained from the Services, Science and Technology Division. This pattern was applied to net sales and receipts by kind-of-business data from the monthly survey to obtain net sales and receipts detail for 1979 to 1986.

The Input-Output data on meals revenues include receipts by kind-of-business, and receipts from university cafeterias. An estimate of tips is allocated to sales of meals excluding meals from take-outs, caterers, refreshment stands, and unlicensed restaurants (identified by the Services, Science and Technology Division) that do not allow employees to accept tips. The service margin on alcoholic beverages is the difference between sales and cost of goods sold. The production of a retailing margin is equal to the sale of merchandise

less cost of goods sold based on the 1971 Census ratio. All other operating revenue is distributed over rental of machinery and equipment, other real estate services (franchise fees), and other rent including vending machine rental. A small proportion of accommodation revenue is included in net sales and receipts.

##### GDP Components

The Restaurant, Caterers and Taverns Survey, unlike the Traveller Accommodation Survey, did not obtain salaries and wages information for the food and beverage service industry. This information is derived by deducting traveller and accommodation salaries and wages data from the T-4 labour income total for the accommodation and food segment. Tips added to output of meals and alcoholic beverages are added to this T-4 based salaries and wages data. An estimate of employees' income in kind is included in salaries and wages.

The unincorporated net/gross income ratio from Revenue Canada taxation data for restaurants, caterers and taverns was adjusted to the 1971 Census net/gross ratio. The adjusted ratio was then projected forward based on the taxation ratio trend. The adjusted net/gross ratio was applied to adjusted gross income of unincorporated business to yield net income. The 1971 Census ratios of surplus to revenue were applied separately to accommodation and to food service revenues to obtain relative weights for allocating corporate surplus between the two industries. The "other surplus" ratio from the 1971 Census was applied to the unincorporated business income data to yield surplus for unincorporated business (depreciation etc).

##### Intermediate inputs

As with accommodation services, the ratios of raw food to meals costs were applied to obtain total inputs of raw food. The commodity distribution was based on the Food Service and Hospitality Survey data (see next section).

The 1971 Census detail was used for other intermediate expenses. This detail was projected forward using the expense detail in *Canada's Hospitality Business*, on expenses such as advertising, heat and light, repair and maintenance, rent, insurance and taxes.

<sup>24</sup> Statistics Canada, *Restaurants, Caterers and Taverns Industry Survey, 1977*. Catalogue No. 63-535 (Ottawa, 1979). Statistics Canada, *Restaurants, Caterers and Taverns Industry Survey, 1978*. Catalogue No. 63-536 (Ottawa, 1980).

<sup>25</sup> Statistics Canada, *Restaurant, Caterers and Tavern Statistics Monthly*, Catalogue No. 63-011 (Ottawa).

## Inputs to the sale of meals

*Food Service and Hospitality Magazine* provides data that relate the cost of raw food purchased to the sale of meals. Separate treatment is given for the accommodation group and for restaurants, caterers and industrial cafeterias. Applying ratios of food costs to Input-Output receipt totals for sales of meals generated a control total for raw food costs.

Raw food costs are expressed as percentages of total receipts for fifteen categories of food input – meat, poultry, eggs, fish and seafood, bakery products, beverages, etc. These percentages are based on changing food consumption patterns and on the Canadian Food Service and Restaurant Association Information Study where data are published every two years. Each of the categories of food inputs is coded to a set of Input-Output commodities, weighted by the available supply. Current year commodity values are estimated by multiplying values from the previous year by the ratio of current year constant dollar receipts to prior years' constant dollar receipts (as a quantity change proxy) and by the consumer price index (CPI) to represent price change. These estimates are adjusted to food service current dollar percentages by each group. The commodity uses are then analyzed in the commodity balancing stage.

## Calculation of service margin and tips on alcoholic beverages

The service margin on alcoholic beverages is calculated using a methodology developed by the National Accounts and Environment Division. This service margin is the difference between sales of alcoholic beverages and their purchase values (cost of goods sold).

Alcoholic beverages sales by accommodation and food services are included in the annual survey receipts data. For food services, beverage sales are estimated by applying the 1978 pattern to current year survey receipts.

Total purchases of alcoholic beverages,<sup>26</sup> are converted from a fiscal to a calendar year by the National Accounts and Environment Division. Sales to non-licensees such as retail chain stores (retail trade data), Quebec grocery stores (Brewer's Association data), and retail outlets in Newfoundland (Newfoundland Liquor Authority data) are deducted from total sales. Sales to licensees not classified in the accommodation and food service industries, and sales to private clubs (estimated) and Armed Forces licensees (Department of

National Defence data) are also deducted. Total sales less the above deductions yield a value of alcoholic beverages purchased by accommodation and food service licensees.

The service margin is split between accommodation and food service licensees according to their alcoholic beverages receipts. Tips for alcoholic beverages sales are estimated by applying a percentage to these receipts.

## 5) Motion picture and video industries

Starting from the reference year 1981, motion picture and video industries consist of two Input-Output worksheet level industries: motion picture exhibition, and motion picture and video production and distribution. The first worksheet industry covers motion picture theatres (including drive-ins). The second covers film, video and audio-visual production; motion picture laboratory operation and post-production services; and film distributors (including video cassette wholesalers).<sup>27,28,29</sup> These components are surveyed annually by the Services, Science and Technology Division.

The operating revenue of motion picture theatres consists of receipts from admissions, concessions and other operating revenues. Receipts from concessions and other operating revenues were allocated to sale of meals, goods purchased for resale, and advertising and rental revenues. The value of goods purchased for resale less cost of goods sold yields an Input-Output retail margin value. Expenditure detail for theatres is obtained from survey data covering salaries and wages, supplementary labour income, film rentals and royalties. Film rentals and royalties are coded to the Input-Output commodity "motion picture entertainment" and represent payments by theatres to motion picture distributors.

Film, video and audio-visual production receipts relate mainly to production revenue and rental of production facilities, which are coded to the Input-Output motion picture commodity. Expenditure detail from the survey includes salaries and wages, employee benefits and freelancer's fees. Other expenditures of a more functional nature include occupancy costs, administration, depreciation, and production costs (mostly motion picture lab costs and post-production services).

<sup>26</sup> Statistics Canada, *The Control and Sale of Alcoholic Beverages in Canada*. Annual, Catalogue No. 63-202 (Ottawa).

<sup>27</sup> Statistics Canada, *Motion Picture Theatre and Film Distributors*. Annual, Catalogue No. 63-207 (Ottawa).

<sup>28</sup> Statistics Canada, *Film and Video in Canada*. Catalogue No. 87-204 (Ottawa).

<sup>29</sup> Statistics Canada, *Motion Picture Production*. Annual, Catalogue No. 63-206 (Ottawa).

Revenues from motion picture laboratory operations and post-production services are also coded to the Input-Output commodity "motion picture entertainment". Expense detail for these firms consists of salaries and wages, employee benefits, and other operating expenses. Surplus and net income can be calculated from separate revenue and expense detail for the corporate and unincorporated portions.

For motion picture film distributors (including video cassette wholesalers) industry revenue represents sales, rentals and licensing revenues, and principal revenue is coded to the Input-Output commodity "motion picture entertainment". In addition, video cassette wholesalers produce a wholesale margin equal to sales less cost of goods sold. Expenses include salaries and wages, employee benefits, and distribution costs (including rentals, royalties and commissions) for domestic and imported productions. Information on imported distribution costs is obtained from Balance of Payments survey data. Imports of this service are also classified as "motion picture entertainment". Other expenditures of the industry include marketing, printing, lab fees, shipping, other distribution costs, occupancy costs, administration, depreciation and other expenses.

Salaries and wages and SLI for all components of the industry are estimated from survey expense data. Surplus and net income, for all components, are directly calculated from separate revenue and expense detail provided for the corporate and unincorporated portions of the industry.

## **6) Amusement and recreational services**

This industry includes the Input-Output industries for horse and other race tracks and gambling operations, along with theatres and sports and recreation services. The race tracks and gambling operations industry includes race track operations and provincial lotteries. The theatres, sports, and recreation services industry consists of commercial businesses earning revenue from theatrical and other staged entertainment services, commercial spectator sports (excluding race tracks), sports and recreational clubs and services, and other amusement and recreational services including the Régie des installations olympiques.

### **a) Lotteries**

The output of lotteries is the sale of tickets less prizes. Annual reports for all lotteries also provide expense data, including salaries and wages, commissions to sellers, costs of printing, advertising, etc. Revenue and expense details from these reports are converted from fiscal to calendar years.

### **b) Race track operations**

The output of horse race track operations is net gate receipts. Annual data for these receipts are obtained from the Race Track section of the *Agriculture Canada Annual Review*. The 1971 Merchandising and Services Census served as a benchmark for allocating the commodity content of total receipts, including net gate receipts, meals, alcoholic beverages, rents, etc. These receipts were adjusted for minor under-coverage of expenditures on other non-wagering races e.g. autoracing. The Services, Science and Technology Division survey now obtains receipts data which distinguish wagering revenue from other revenues. The wagering revenue data were very close to the Agriculture Canada data. The Services, Science and Technology Division also provides data on receipts of other race tracks.

Salaries and wages were initially estimated from 1972 to 1982 for race tracks using a composite index applied to the base year (1971) value of salaries and wages. An index of the number of races served as a quantity proxy and average weekly wages served as a price proxy. Ratios of salaries and wages to receipts were available from preliminary results of the Services, Science and Technology Division 1982 survey at the time of the historical revision. These ratios were interpolated between 1971 and 1982, and were applied to race track receipts to generate salaries and wages.

Salaries and wages and other expense detail were calculated using Services, Science and Technology Division data in more recent years. Additional salaries and wages and net income were estimated to include race horse farm training and stable operations, which are not presently surveyed.

### **c) Other recreational services**

The revenue data for other recreational services are receipts for recreation services, meals, rentals, and service margins in alcoholic beverages and goods purchased for resale. The 1971 Census pattern was used to allocate these receipts to commodities.

The main industries that comprise other recreational services are: sports and recreation clubs e.g. golf courses; amusement services; bowling alleys and coin operated amusement; and other recreational services such as swimming pools, tennis facilities, hockey schools etc.

Revenue estimates from the 1971 Census were compared with *Corporation Financial Statistics* data for corporate businesses and with Revenue Canada data for unincorporated businesses. The *Corporate Financial Statistics* data (at the 1960 SIC level) detailed bowling alleys and billiard parlours (SIC 853) and other recreational services (SIC 859). The latter industry contained some elements which belong to other Input-Output industries such as motion picture and video production and distribution, some data on provincial lotteries, Régie des installations olympiques, and race tracks. Estimates of these values were removed to arrive at the corporate portion of "other recreational services".

A computer sorting of the 1960 SIC-based corporate financial data yielded a 1970 SIC-based estimate of corporate revenue that, together with unincorporated revenue, gave total industry output levels for 1979 to 1981. The output for the prior years (from 1971 to 1979) was interpolated using a composite wage index. The revenue total and trend were re-examined during the historical revision. The Services, Science and Technology Division's preliminary 1982 corporate revenue data were compared to revenues from the computer sort. This resulted in revenues for the "other recreation" component being revised 6% upward.

Revenue Canada taxation data were used to estimate gross and net income of unincorporated business, including other entertainers. The 1971 Census did not capture all the gross income of unincorporated artists and entertainers; therefore an estimate was added to the 1971 Census and subsequent revenue data.

The Services, Science and Technology Division provided the 1982-1986 revenues for other recreation (excluding a portion of other professional entertainers). Unincorporated gross business income for a portion of other entertainers, from Revenue Canada taxation data, was added to the 1982-1986 revenues. Special estimates were made for the year 1986 to include revenue, intermediate inputs and GDP for Expo '86. These were based on annual financial reports.

#### GDP

Initial estimates of salaries and wages for the other recreational services industry involved projecting 1971 Census salaries and wages data to 1976 using a composite labour income index. Salaries and wages data from

1976 were indexed forward using a labour income index for commercial services. An estimate of salaries and wages for bands and orchestras was added along with an estimate for tips from the sale of meals and alcoholic beverages. Analysis of data during the historical revision, using preliminary 1982 data, indicated somewhat higher revenue levels for other recreational services. Based on this, salaries and wages data were adjusted upward. The T-4 data on salaries and wages for other recreational services included substantial non-commercial activity and could not be used.

The Census net/gross ratio for 1971 was slightly higher than the net/gross ratio from the Revenue Canada taxation data, such that the latter ratio was scaled up for subsequent years to calculate net income. The net income for other recreation (excluding entertainers) was estimated using the movement of taxation data applied to the 1971 benchmark. The adjusted net/gross ratios from the 1972-1986 period were applied to the estimated gross income for 1972 to 1986.

Total revenues less unincorporated revenues yielded corporate revenues. The ratio of surplus to corporate receipts from the 1971 Census was compared to the surplus ratio calculated from the corporate data for the other recreation industry after adjusting for lotteries, etc. The Census ratio was higher, so 1972-1986 ratios from the corporate source were adjusted upward. The adjusted surplus-to-revenue ratios were applied to corporate revenues to estimate operating surplus for the corporate portion. The 1971 Census proportion of other surplus for unincorporated business was applied to unincorporated business revenues for 1972-1986.

#### Inputs

Intermediate expense detail from the 1971 Census was used for the benchmark year (1971). Corporate financial data expense details were used to project values of expenses such as repairs and maintenance, rents paid, indirect taxes, royalties paid, and machinery and equipment rentals. Periodic tabulations of expense detail from T-2 corporate returns and T-1 unincorporated business returns were obtained from the tax record source during the 1970's. The Services, Science and Technology Division expense detail was used in recent years (1982-1986).

## 7) Laundries and cleaners

The 1971 Census provided receipts for: 1) power laundries, dry cleaning and dyeing plants; 2) self-service laundries and cleaners; and 3) all others, including distributors, hand laundries, diaper service, hat cleaners, valet service, and rug cleaning and repairing.

### Output

Based on the 1971 Census, the receipts for power laundries, dry cleaners and dyeing plants were estimated from 1972 to 1975 using the trend of published receipts for this industry group.<sup>30</sup> This annual publication was discontinued in 1976, so the rate of change of operating revenue calculated from corporate financial data was used to estimate power laundries receipts from 1976 onward. Receipts for self-service laundries and cleaners from 1972 onward were projected from a composite index of the number of households without washers (from the household facilities survey) and the Consumer Price Index for self-service laundries. Receipts for the "all other" category were projected from 1971 Census receipts in the same way as power laundries, dry cleaners, and dyeing plants. The total estimated receipts for the industry were disaggregated into receipts for services, sale of meals, and goods purchased for resale using the 1971 Census data. In addition, rents of land and buildings were estimated from corporate financial data and added to total receipts.

Input-Output receipts are higher than published data from the Services, Science and Technology Division for 1982-1986. This was mainly because the Input-Output adjusted receipts for unincorporated business (based on the 1975 survey) were higher than the Revenue Canada taxation data. There was also a small estimate for undercoverage relating to coin-operated equipment in apartments because Family Expenditure data<sup>31</sup> showed a higher value of coin-operated laundry service purchased than the value obtained from the Services, Science and Technology Division's revenue data.

### GDP

Salaries and wages data from 1971 to 1975 were available for power laundries, dry cleaners and dyeing plants. Salaries and wages for the other components were estimated using the 1971 Census ratio of wages and salaries to revenue. From 1975 onward, salaries and wages were estimated at the total industry level using annual corporate financial ratios of salaries and wages to corporate receipts. Estimates of net income and surplus for 1971-1975 were based on survey data.

Estimated total revenues from 1975 onward were split into corporate and unincorporated business revenues, based on the 1975 survey proportions. The net/gross ratio for 1975 was projected from such ratios from taxation files, and applied to gross income to obtain the net income of unincorporated business. The ratio of corporate surplus to revenue for 1975 was projected forward on corporation tax data and applied to corporate revenues to obtain corporate surplus. Salaries and wages and intermediate inputs were calculated from Services, Science and Technology Division survey expense detail.

## 8) Other personal services

The other personal services industry includes barber and beauty shops; funeral services; shoe repair shops; other personal services (including fur cleaning and repair, dress making and miscellaneous personal services); and establishments which provide child care outside the home.

### a) Barber and beauty shops

#### Output

The 1971 Census receipts for barber shops were adjusted upward to compensate for undercoverage relative to the 1966 Census. These adjusted total receipts were projected forward by applying a composite of the Consumer Price Index (CPI) for men's haircuts and a quantity index (male population). Beauty parlour receipts for 1971 were projected by applying the CPI for women's hairdressing to a quantity index (female population). Estimated receipts were close to the sum of corporate financial and unincorporated tax revenues. The value of tips was added to receipts.

Receipts and expense detail from the Services, Science and Technology Division were used to estimate output and inputs in recent years. Revenues were raised to account for tips and some undercoverage. The Family Expenditure data showed a higher value of personal expenditure than the value obtained from survey revenues.

<sup>30</sup> Statistics Canada, *Power Laundries, Dry Cleaning and Dyeing Plants*. Annual, Catalogue No. 63-205 (Ottawa).

<sup>31</sup> Statistics Canada, *Family Expenditure in Canada*, 1978. Catalogue No. 62-549 (Ottawa, 1980).

Statistics Canada *Family Expenditure in Canada*, 1982. Catalogue No. 62-555 (Ottawa, 1984).

Statistics Canada, *Family Expenditure in Canada*, 1986. Catalogue No. 62-555 (Ottawa, 1989).

**GDP**

Salaries and wages were estimated separately for the corporate and the unincorporated portions of the industry. The ratio of salaries and wages to gross business income from the Tax Record Access sample file was applied to unincorporated business revenues. The corporate financial ratios of salaries and wages to revenue were applied to corporate revenues. The estimated salaries and wages were close to T-4 data.

Net income was obtained by applying net/gross ratios (from taxation data) to estimated unincorporated revenues. The "other surplus" proportion from the 1971 Census was used to estimate the surplus for unincorporated business. The ratio of corporate financial surplus to revenue was applied to corporate revenues to generate corporate surplus.

**b) Funeral services****Output**

The 1971 Census provided receipts data for funeral directors. The average cost of funerals was estimated based on the occasional survey of funeral directors for 1972, 1976, 1980.<sup>32</sup> The cost of funerals was interpolated between the survey years, using a National Accounts and Environment Division price index of funeral services. Total receipts for funeral directors were projected forward on a composite index of average cost and the number of deaths. Additional estimates were made for internment revenues. Annual receipts (1984-1986) for the industry, and expense detail, were provided by the Services, Science and Technology Division.

**GDP**

Revenue Canada taxation data were used to compute gross and net income. Salaries and wages and ratios of surplus to revenue were interpolated between survey years and applied to total revenues. The T-4 data for salaries and wages were used from 1982 to 1986.

**c) Shoe repair shops**

The 1971 Census and periodic Family Expenditure surveys were basic sources for estimating total revenue of shoe repair shops. The corporate portion of revenues from corporation financial data is small, and there was no comparable category in the Revenue Canada (FOC) unincorporated data. Unincorporated business revenue was obtained residually.

**GDP**

The 1971 net/gross income and other surplus ratios were applied to unincorporated business receipts to estimate net income and other surplus for the unincorporated segment. Corporate surplus totals from corporate financial data were used. Salaries and wages data were projected using receipts. Revenue and expense data are provided by the Services, Science and Technology Division for recent years (1982-1986). Estimates of intermediate expenses are calculated from the available data as are salaries and wages. Net income is presently obtained from Revenue Canada data (TRA).

**d) Other personal services****Output**

The 1971 Census receipts for fur cleaning, repair and storage were projected forward using an index for shipments of fur apparel. The 1971 Census receipts for miscellaneous personal services (including health salons) were projected using a composite index based on population and an Input-Output deflator for personal services. Estimates of receipts for these services were verified against Family Expenditure Survey benchmarks. Receipts for the more recent time periods (1982-1986) were obtained from the Services, Science and Technology Division.

**GDP**

A variety of estimating procedures for GDP were used before receipt of 1982-1986 data from the Services, Science and Technology Division. The 1971 proportion of unincorporated business receipts was applied to estimated total receipts to obtain unincorporated business gross income. The 1971 Census net/gross and other surplus ratios were applied to derive net income and other surplus of unincorporated business. The 1971 surplus ratio was applied to corporate receipts to obtain corporate surplus. Salaries and wages ratios to revenues for 1971 were projected forward, based on receipts, for each component of other personal services. Salaries and wages estimates excluding tips were several percentage points higher than the Labour Division T-4 data. Salaries and wages for 1982-1986 estimated from Services, Science and Technology Division ratios are close to

<sup>32</sup> Statistics Canada, *Funeral Directors, 1972*. Catalogue No. 63-523 (Ottawa, 1974).  
Statistics Canada, *Funeral Directors, 1976, 1980 and 1984*. Catalogue No. 63-532 (Ottawa, 1978, 1982 and 1987)

the T-4 data. Present estimates use Services, Science and Technology Division 1982-1986 data to calculate intermediate expenses and surplus.

#### e) Day care and other child care outside the home

Privately-run day care and other child care outside the home are included in the business sector. The Health and Welfare Canada publication *Status of Day Care in Canada* provided data on the number of spaces in day care centres, and also supplementary descriptive information by province. Contact was made with provincial day care officials who estimated the number of children attending, costs per child, staff required, proportion of profit and non-profit centres, etc. This information was used to obtain an estimated revenue for profit-oriented day care.

Family Expenditure Survey values for 1969, 1978, 1982 and 1986 were used with adjustments for non-commercial day care. These values represented payments by persons for day care provided by business and government. An estimate of government revenues (from Public Institutions Division data) for day care was deducted from the Family Expenditure Survey benchmarks to arrive at business revenues. A composite index projector was constructed using the number of day care enrolments (for quantity) and the price index for education. The ratios of salaries and wages and net income to revenue were based on proportions suggested by the day care officials contacted.

Child care outside the home is included in the business sector as a part of personal services. The Family Expenditure Survey offers the only revenue data for these services. Intermediate inputs are minimal as this type of child care generates mostly net income.

Separate expense structures were estimated for the components of barber and beauty services, funeral services, shoe repair, other personal services, babysitting and day care. The 1971 input structure was projected forward using corporate financial detail and periodic samples of expenses from corporate (T-2) and unincorporated (T-1) data. Recent data (1982-1986) used Services, Science and Technology Division expenditure detail for the components which are covered by surveys.

#### 9) Photographers

This industry includes commercial photographers and portrait photographers. Bench-

marks for gross receipts were available from the 1971 Census and from a computer sorting of corporate revenues to a 1970 SIC basis from the corporation tax data for 1979-81, and Revenue Canada unincorporated revenue data. Estimates for the intervening years were based on personal disposable income data combined with Family Expenditure Survey data for benchmark years. Photo labs were initially included in this industry but were later re-classified to the manufacturing industry (see below).

#### Output

Development and photo labs are classified to manufacturing industries in the 1980 SIC. Accordingly, photo lab revenues and inputs were removed from the Input-Output service industry data for 1961-1981 at the time of the historical revision. Revenue and expense details for development and photo labs were obtained from the Industry Division data for 1983, the first year they were surveyed. Revenues for development labs were projected backward, using consumer photographic expenditure data to interpolate between benchmark years. The 1961, 1966 and 1971 Census receipts for development and photo labs were used as benchmarks. Development and photo labs data were then added to manufacturing industries' data. The residual was the output of the photography service industry.

Estimates of receipts for the Input-Output tables are higher than those from the Services, Science and Technology Division for 1982-1986, since the Revenue Canada (FOC) data with higher gross business income were used.

#### GDP

Salaries and wages were estimated for the unincorporated portion using the Revenue Canada (sample tax record access) ratio of salaries and wages to gross business income. Salaries and wages for the corporate portion were estimated using the corporate salaries and wages to receipts ratio. The sum of corporate and unincorporated estimated salaries and wages was lower than the T-4 data because photo labs are included in T-4 data (under the 1970 SIC classification). Net income was obtained from Revenue Canada taxation data (FOC) for photographers. The corporate ratios of surplus to revenue from corporate financial data were used to obtain corporate surplus.

#### 10) Miscellaneous service industries

This industry comprises establishments earning revenue from miscellaneous services to business and persons - e.g., trade associations, auto and truck rental, etc. It also includes establishments earning revenue from repair services such as welding and services to buildings.

**a) Miscellaneous services to business and persons**

**Output**

This portion of the industry comprises establishments involved in auto and truck rentals, machinery and equipment rental, and other services such as trade fairs, automobile associations, etc.

Professional, industrial and trade associations are also included in this industry and their receipts are classified to a commodity called "trade association dues". Trade associations were surveyed in the 1971 Census, and also in 1973 and 1980. Estimated inputs of trade association dues to all industries were used to project receipts of association dues between the benchmark years and forward to 1986.

Auto and truck rental, machinery and equipment rental, and other services components of the industry were estimated separately. Revenues for the 1971 Census list of rental companies were manually matched with revenues for the same companies in the *Corporation Financial Statistics* data. This method was necessary because receipts from corporate data for the 1960 SIC 899 included significant revenues from companies that did not belong to this industry. The revenue growth rates of these companies were used to project the 1971 Census revenues data for auto and truck rentals and machinery and equipment rentals forward to 1976. Companies involved in motor vehicle, equipment and machinery rentals were surveyed in 1976.<sup>33</sup> These receipts were adjusted upward in 1976 by matching the survey data with the corporate list of companies (based on the Business Register), which contained more rental companies. The adjusted 1976 receipts were interpolated from 1976 to 1982 using corporate receipts on a 1970 SIC basis and the 1982 preliminary survey receipts data from the Services, Science and Technology Division. This Division provided revenue and expense totals and detail for 1982-1986 at the three-digit and four-digit level of the 1980 SIC.

**GDP**

The 1976 survey-based ratios of salaries and wages to revenue were calculated for the auto and machinery rental components and were interpolated back to the 1971 Census ratios. The interpolated 1972-1975 ratios were applied to revenues to obtain salaries and wages estimates for these years. The 1971 Census ratio of salaries and wages to annual revenue for other services was used

to estimate salaries and wages for this component. The 1982 Services, Science and Technology Division preliminary survey ratios of salaries and wages to receipts were used as benchmarks to interpolate salaries and wages from 1982 back to 1976. Services, Science and Technology Division ratios of salaries and wages to receipts were used for 1982-1986.

Data on gross and net income of unincorporated business were available in 1971 and 1976 for automobile, truck rentals, machinery and equipment rentals and miscellaneous services components of the industry. The 1971 and 1976 data were used as benchmarks to estimate gross and net income for auto and truck rentals, and for machinery and equipment rentals from 1972 to 1975. Net income for these two components of the industry was estimated from 1977 to 1986 using Revenue Canada taxation data (TRA based). The unincorporated business share of total revenues and the 1971 Census net/gross ratio were used to obtain gross and net income estimates for the miscellaneous services component.

The "other surplus" component of unincorporated business was calculated using the 1971 Census ratios of "other surplus" to gross business income. Corporate surplus was estimated for auto and truck and machinery rentals by interpolating the ratio of corporate surplus to receipts between the 1971 and 1976 Censuses and by applying the estimated ratios to corporate revenues for the intervening years. The 1976 ratio of surplus to corporate receipts was used to estimate corporate surplus from 1976 to 1981. Services, Science and Technology Division survey data were used to obtain ratios to apply to corporate receipts to generate corporate surplus for the 1982-1986 period.

**b) Welding and miscellaneous repair shops**

**Output**

The industry comprises welding shops, electric motor repair services, and miscellaneous repair (carpets, small appliances) shops. The 1971 Census receipts for the industry were projected for the corporate and the unincorporated portions. Unincorporated receipts were projected forward based on the gross business income of unincorporated repair shops (Fine Occupation Code 121). Corporate receipts were projected forward

<sup>33</sup> Statistics Canada, *Motor Vehicle, Equipment and Machinery Rentals, 1976*. Catalogue No. 63-533 (Ottawa, 1978).

based on the corporate financial data for sales of products, service and commissions (1960 SIC's 894, 896) for the 1971-1981 period. The Services, Science and Technology Division provided revenue and expense detail from 1982 to 1986.

Receipts were divided between sales of services, rentals, and goods purchased for resale (GPRS). GPRS were split by class of customer, since sales to household consumers are assigned a retail margin while sales to other classes of customer are assigned a wholesale margin. Ratios of margins (sales less cost of goods sold) to GPRS were interpolated from 1971 Census and 1982 preliminary survey data obtained from the Services, Science and Technology Division and applied to GPRS values.

Estimated salaries and wages were close to T-4 data. The net/gross income ratio from 1971 Census data was adjusted slightly to reflect net/gross revenue changes in Revenue Canada data. Ratios of "other surplus" to revenue from the 1971 Census were used to estimate the other surplus component of unincorporated business. The corporate financial data surplus to revenue ratio was used to estimate corporate surplus.

### c) Services to buildings and dwellings

#### **Output**

This industry comprises establishments offering disinfecting and exterminating services, window cleaning, janitorial services, and other miscellaneous services to buildings and dwellings.

The 1971 Census receipts were used as base year data. A revenue estimate for residential janitorial services (not covered in the 1971 Census) was added to these receipts. No Revenue Canada class (FOC) could be used to project unincorporated

business revenue from 1971 onward. The corporate financial data on services to business and dwellings showed irregular year-to-year revenue movements and were not used to estimate corporate revenues. Instead, a composite labour income index was used to estimate total receipts. Services, Science and Technology Division revenue data from the 1982 preliminary survey and 1970 SIC-based revenue data for the 1979-1982 period indicated higher revenues than the index-based estimate, so in the historical revision the data were adjusted upward for all years, including 1971.

Revenues were split between the corporate and unincorporated portions by applying the 1971 Census proportions. The 1971 Census ratio of net to gross income was applied to unincorporated business revenues for 1972 to 1981 to estimate net income, because there was no Revenue Canada class to determine changes in the ratio. The "other surplus" ratio was used to estimate other surplus for unincorporated business. Ratios of annual corporate surplus to revenue were used to adjust the 1971 Census corporate surplus ratios. These adjusted ratios were applied to estimated corporate revenues to obtain corporate surplus for 1972 to 1981. The T-4 salaries and wages data were used from 1973 to 1981, and were projected backward to 1971 using the labour income index.

Services, Science and Technology Division receipts data were used for the 1982-1986 period. Unincorporated business income for this period (from TRA data) was in line with the estimated 1981 gross business income. The 1971 Census "other surplus" ratio was applied to unincorporated business revenues to estimate other surplus of unincorporated business. Net income was obtained from the Tax Record Access data. The T-4 salaries and wages data were used from 1982 to 1986.





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